

hibited by this act, if such property alone was considered, I refer to that circumstance in which I spoke of operators in that pool having a common responsibility in carrying out their operations in conformity with the highest order of conservation. Therefore if an individual might have the right or if he might temporarily be producing at a rate that did not indicate waste at that time it is out of proportion that it would not be at another time. I assume you're asking is that legitimate or is it not?

Q. Do you understand that provision under that bill that any given field or area?

A. Nobody is immune.

Q. Wait a minute. Do you understand that under that provision of that bill that in any field, say a well is running ten thousand barrels per day and not hurt anybody else?

A. It depends on what the local conditions are.

Q. From your experience could you let one well run wild without having any effect upon another well?

A. If it is in the middle of ten thousand acres it would not hurt anybody, if it is up next to the line it would yes. It depends on the conditions.

Q. In rateable takings, over a given field, in your interpretation of rateable takings, if a man had a well out there, that showed no particular condition to indicate there was any waste above or below ground would you put him on rateable takings or let him run wide open?

A. I would put him on rateable takings.

Q. Why?

A. To conserve the gas.

Q. I asked you if his waste,

A. Here is an example, suppose he runs one thousand barrels a day and it only shows five hundred cubic feet of gas per barrel, suppose it run ten thousand barrels per day and it takes two thousand cubic feet of gas, it takes four times as much gas to produce that oil. That is the reason I say I would want an opportunity to go over this in detail, I would not want to commit myself. If he has gas enough to produce ten thousand barrels per day

it certainly ought to be produced under restrictions.

Q. You have said that you advocate rateable taking. Can one man run more oil than another man because he has got a better well?

A. The condition you speak of may be an apparent condition. In other words, it may be a temporary condition, but if he pulls all that well he is affecting his ultimate recovery. In other words it don't make any difference how you produce your well, whether in the middle of a thousand acre tract or in the middle of a one acre tract.

Q. In other words, as you see it, to enforce your idea of conservation, the real tool you would use to do it would be rateable taking?

A. Yes.

Q. First?

A. Yes.

Q. Regardless?

A. Yes.

(On motion duly made and seconded, the committee adjourned until Thursday, July 23rd, at 9 o'clock a. m.)

#### SEVENTH DAY.

Senate Chamber,  
Austin, Texas,  
July 23, 1931.

The Senate met at 9 o'clock a. m., pursuant to adjournment, and was called to order by Lieutenant Governor Edgar Witt.

The roll was called, a quorum being present, the following Senators answering to their names:

Beck	Oneal.
Berkeley.	Parr.
Cousins.	Parrish.
Cunningham.	Patton.
DeBerry.	Poage.
Gainer.	Pollard.
Greer.	Rawlings.
Hardin.	Russek.
Holbrook.	Small.
Hornsby.	Stevenson.
Loy.	Thomason.
Martin.	Williamson.
Moore.	Woodruff.
Neal.	Woodward.

Absent—Excused.

Hopkins.	Woodul.
Purl.	

Prayer by the Chaplain.

Pending the reading of the Journal of yesterday, the same was dis-

pensed with on motion of Senator Woodward.

**Petitions and Memorials.**

(See Appendix)

**Committee Reports.**

(See Appendix)

**Bills and Resolutions.**

By Senator Loy:

S. B. No. 9, A bill to be entitled "An Act granting permission to Red River Bridge Company of Texas, and J. R. Handy of Grayson County, Texas, Receiver for the said Red River Bridge Company of Texas, to sue the State Highway Commission and the State of Texas, upon those two certain contracts purported entered into by and between members of the State Highway Commission and Red River Bridge Company of Texas, on or about the fifth day of July, 1930, relating to the acquisition by the Highway Commission operated by said Red River Bridge Company, spanning the Red River between the cities of Durant, Oklahoma and Denison, Texas; and declaring an emergency."

Read and referred to the committee on Highways and Motor Traffic.

**Senators Excused.**

On motion of Senator Moore, Senator Hopkins was excused for the day on account of important business.

On motion of Senator Holbrook, Senator Woodul was excused for the day on account of important business.

**Message From the Governor.**

The Chair recognized the Doorkeeper, who introduced a messenger from the Governor with the following message:

Executive Office.

July 22, 1931.

To the Senate and House of Representatives, Forty-second Legislature:

I beg to submit herewith what I deem a real emergency, and I beg of you to give it your prompt and earnest consideration.

The Highway department of Texas and Oklahoma have recently completed a free bridge across the Red

River between Denison, Texas, and Durant, Oklahoma.

Before the beginning of the construction of this free bridge by the respective states it became necessary, on account of certain litigation, brought by the Red River Bridge Company, the owners of the toll bridge, for the Texas Highway Commission to make certain contracts with the bridge owners, whereby this litigation would be dismissed.

About the time of the completion of this free bridge by the respective states there arose a difference of opinion between the Texas Highway Commission and the bridge company as to the meaning or construction of the contract, which resulted in the bridge company filing a suit in the United States District Court at Houston, Texas, and obtaining an injunction against the Highway Commission of Texas and their employees, enjoining them from opening the free bridge on the Texas side and also commanding them to keep it closed until a settlement could be obtained upon said contract.

This injunction is still in force and it appears that this litigation will be long drawn out. Therefore, I feel that it would be to the best interest of the State of Texas that the Legislature pass a bill permitting the bridge company to sue the State of Texas. I am reliably informed that if this should be done the injunction will immediately be dismissed and the bridge be immediately opened for the public use.

Respectfully submitted,

R. S. STERLING,  
Governor of Texas.

**Senate Bill No. 9.**

Unanimous consent was granted Senator Loy to take up the following bill:

By Senator Loy:

S. B. No. 9, A bill to be entitled "An Act granting permission to Red River Bridge Company of Texas, and J. R. Handy of Grayson County, Texas, Receiver for the said Red River Bridge Company of Texas, to sue the State Highway Commission and the State of Texas, upon those two certain contracts purported entered into by and between members of the State Highway Commission and Red River Bridge Company of Texas, on or about the fifth day of July, 1930, relating to the acqui-

tion by the Highway Commission operated by said Red River Bridge Company, spanning the Red River between the cities of Durant, Oklahoma and Denison, Texas; and declaring an emergency."

On motion of Senator Loy the constitutional rule requiring bills to be read on three several days was suspended and S. B. No. 9 was put on its second reading by the following vote:

## Yeas—28.

Beck.	Oneal.
Berkeley.	Parr.
Cousins.	Parrish.
Cunningham.	Patton.
DeBerry.	Poage.
Gainer.	Pollard.
Greer.	Rawlings.
Hardin.	Russek.
Holbrook.	Small.
Hornsby.	Stevenson.
Loy.	Thomason.
Martin.	Williamson.
Moore.	Woodruff.
Neal.	Woodward.

## Absent—Excused.

Hopkins.	Woodul.
Purl.	

The rule requiring committee reports to lie over 24 hours was suspended by a unanimous vote.

The committee report, carrying an amendment, was adopted.

The bill was read second time and passed to engrossment.

On motion of Senator Loy the the constitutional rule requiring bills to be read on three several days was suspended and S. B. No. 9 was put on its third reading and final passage, by the following vote:

## Yeas—28.

Beck.	Oneal.
Berkeley.	Parr.
Cousins.	Parrish.
Cunningham.	Patton.
DeBerry.	Poage.
Gainer.	Pollard.
Greer.	Rawlings.
Hardin.	Russek.
Holbrook.	Small.
Hornsby.	Stevenson.
Loy.	Thomason.
Martin.	Williamson.
Moore.	Woodruff.
Neal.	Woodward.

## Absent—Excused.

Hopkins.	Woodul.
Purl.	

Read third time and finally passed by the following vote:

## Yeas—28.

Beck.	Oneal.
Berkeley.	Parr.
Cousins.	Parrish.
Cunningham.	Patton.
DeBerry.	Poage.
Gainer.	Pollard.
Greer.	Rawlings.
Hardin.	Russek.
Holbrook.	Small.
Hornsby.	Stevenson.
Loy.	Thomason.
Martin.	Williamson.
Moore.	Woodruff.
Neal.	Woodward.

## Nays—1.

Purl.
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## Absent—Excused.

Hopkins.	Woodul.
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## Message from the House.

Hall of the House of Representatives  
Austin, Texas, July 23, 1931.

Hon. Edgar Witt, President of the Senate,

Sir: I am directed by the House to inform the Senate that the Honorable Thomas P. Gore, United States Senator from the State of Oklahoma, has been invited to address the House at 10:00 o'clock a. m., today, Thursday, July 23, 1931. The Senate is invited to be present for the address.

The House has adopted the following resolution:

H. C. R. No. 4. requesting the Governor of Texas to call a meeting of Governors of all cotton producing States.

Respectfully submitted,

LOUISE SNOW PHINNEY,

Chief Clerk, House of Representatives.

## Invitation Accepted.

The invitation extended by the House to hear Hon. Thomas P. Gore was accepted by the Senate.

## S. C. R. No. 2.

Senator DeBerry sent up the following resolution:

Whereas, Agriculture and livestock raising are the basic industries in the State of Texas and have brought to the producers and workers in those industries a continuing series of losses during the past decade, due partly to other causes and partly to a combination of ever increasing freight tariff combined with great distances from ultimate markets of the products of such industries, the costs of transportation of said products under said freight tariff schedules in many instances exceeding the market value of the agricultural, or livestock commodity at destination; and,

Whereas, The agricultural and livestock industries of Texas and the Southwest can not fully recover from the distressed condition in which they now are, in the absence of more favorable freight rates and tariffs for the commodities of such industries, and particularly is the condition at this time such as that a further increase in the freight tariff schedules on the products of the farms and ranches of Texas and the Southwest would be disastrous, and would in effect absolutely deprive the farmers and stock raisers of Texas and the Southwest of their markets for their products; and,

Whereas, During the past decade freight tariff schedules of the railroads of the Nation and of Texas and the Southwest have been constantly appreciated or increased until at this time they are generally higher than ever before, and the market values of agricultural and livestock products, as well as every other commodity of trade in this country, have gradually depreciated or decreased until at this time they are at the lowest peak average in two decades, there being no response of freight rates and tariff schedules to the distressed market values of the commodity transported under said rates and schedules with the attendant result that such rates and schedules now are disproportionately high and are basically and economically excessive, and there being considered by the Interstate Commerce Commission of the United States at this time a joint application of the principal railroad transportation systems of the United States, including those operating in Texas, for an increase in the rates permitted to be charged by them for commodities transported,

which 15% rate increase is not only not justified under present conditions but would prove to be disastrous to the agricultural and livestock interests of this state; therefore be it

Resolved by the Senate of the State of Texas, the House of Representatives concurring, That we do, by these presents, petition as the duly elected representatives of the people of Texas and for them petition the Interstate Commerce Commission not to allow the 15% general increase in freight rates and schedules as applied for by the common carriers of the country, and that we do respectfully urge said, Interstate Commerce Commission, seriously to study conditions with the view of bringing about substantial reductions in the cost of transportation of agricultural and livestock commodities and products, and resolve further that the Secretary of the Senate and the Chief Clerk of the House be, and they are hereby instructed and directed, each of them, to send a certified copy hereof to each of the members of the Interstate Commerce Commission.

DEBERRY.  
WOODRUFF.

Read and adopted.

Recess.

On motion of Senator Woodward, the Senate, at 9:48 o'clock a. m., recessed until 11 o'clock a. m.

After Recess.

The Senate met at 11 o'clock a. m., pursuant to recess, and was called to order by Lieutenant Governor Edgar Witt.

Adjournment.

On motion of Senator Woodward, the Senate, at 11:03 o'clock a. m., adjourned until 9 o'clock tomorrow morning.

#### APPENDIX.

##### Petitions and Memorials.

Austin, Texas, July 22, 1931.  
Hon. Edgar E. Witt, Lt. Governor,  
and Members of the Senate.  
Austin, Texas.

Dear Colleagues:—

Your kindly consideration of me in my recent bereavement in the loss of my beloved brother, and the only

father I ever knew, John F. Martin, will be a cherished memory with me so long as my own life's lamp holds out to burn. We all know that one must bear such burdens alone, still we realize that the burden is much lighter when one realizes that friends sympathize.

My brother's family join me in grateful expressions of appreciation of your thoughtfulness in sending representatives from this department in the persons of Senator Poage and Senator Loy to my brother's funeral, and in the floral offerings, all of which made our burdens much easier to bear.

We thank God for such friends. It is our sincere wish and prayer that each and all of you may at all times be surrounded by such friends.

Gratefully your,

WILL M. MARTIN.

#### Committee on Engrossed Bills.

Committee Room.

Austin, Texas, July 23, 1931.

Hon. Edgar E. Witt,  
President of the Senate.

We, your Committee on Engrossed Bills, have had Senate Bill No. 9 carefully examined and compared and find same correctly engrossed.

HARDIN, Chairman.

#### Committee Reports.

Committee Room.

Austin, Texas, July 23, 1931.

Hon. Edgar E. Witt,  
President of the Senate.

Sir: We, your committee on State Highway and Motor Traffic, to whom was referred

S. B. No. 9, have had the same under consideration, and I am instructed to report it back to the Senate with the recommendation that it do pass, with Committee Amendment and be not printed.

HARDIN, Chairman.

#### Committee Amendment.

Amend Senate Bill No. 9 by inserting after the word "Whereas" and before the word "it" in the first line of the third paragraph of said bill the following: "although the Legislature does not admit that the Red River Bridge Company or the said Receiver T. R. Handy has a valid or just claim against the Highway Commission."

#### TRANSCRIPT OF TESTIMONY.

Thursday, July 23rd, 1931, 9:30 a. m.

The committee convened at 9:30 a. m. and adjourned until 11 o'clock a. m.

11:00 a. m.

The Chairman: Mr. Foran advises me that it will take him about ten minutes to prepare his exhibits and then proceed with his testimony and we will just stand at ease for about ten minutes until he is ready. Upon reconvening the following proceedings were had.

Mr. Barker: Mr. Chairman, I would like to ask the witness two or three questions in connection with where we ended yesterday afternoon.

The Chairman: Who had charge of the witness yesterday afternoon when we adjourned?

Senator Woodward: Senator DeBerry.

Senator DeBerry: I want to ask him two or three more questions.

The Chairman: Senator DeBerry, you did not conclude yesterday afternoon?

Senator DeBerry: No, I want to ask him a few more questions then I will get through very quickly. I feel like I have taken up more than my share of the time but I want to go just a little bit further. Mr. Foran, yesterday afternoon I was asking you some questions with respect to rateable takings, and my definition for that is proration whether you agree with that or not, it is proration to me. If I understood you yesterday you made the statement you did not think conservation could be accomplished without rateable takings accompanying it, is that so?

A. Yes, sir.

Q. Will you explain just what you mean by rateable takings?

A. Rateable takings in my opinion implies rateable production, of course. If takings are rateable it is a reasonable or natural consequence that production must be rateable also. Rateable production in my opinion is the taking or withdrawing of oil in proportionate amount of the different wells' ability to produce oil without concurring or incurring physical loss.

Q. Yesterday afternoon I questioned you some about this specific bill, do you know enough about this

bill to know that in its definition of waste, and as it includes all definitions previously adopted in the statute, do you think that under those definitions that all ideas of waste that you are theoretically concerned with are theoretically taken care of?

A. I do.

Q. In rateable takings would be violator and the nonviolator in the field be penalized alike, that is if any consider rateable takings a penalty, which it may or may not be?

A. Under rateable takings or rateable production there could not be any violators, so I am unable to answer your question.

Q. Do you think in fields some companies intentionally disregard this equation you discussed yesterday to some gentlemen?

A. I think that has been the case in certain limits, yes.

Q. Would that not leave you to say or leave you to believe or leave you to know that if you took rateably all would be benefited or penalized alike?

A. I do not see how they could be penalized by rateable production.

Q. The question I am seeking to bring out, you stick to the ideal, I will ask you under a condition not ideal, suppose the Board that had the power to exercise these rules, suppose they were ignorant or malicious, wouldn't they all be penalized or helped alike?

A. As I understand it the bill calls for the Board to have public hearings, and I cannot conceive of them being ignorant or acting malicious in the face of a proper public hearing.

Q. It would be sufficient to say that the amount of oil each well produces, without taking into consideration it's potential probabilities, the rule would be applied alike, is that right?

A. Yes, sir.

Q. Now, under your idea of trying to make, as you say all hazards are alike?

A. Yes, sir.

Q. Therefore, the benefits are more or less common under an ideal condition, how far do you think this ideal condition should be carried? Do you think it should be carried to the extent that the pool be operated as a unit?

A. If that is possible, yes, that

is the ultimate objective, and the most desirable objective, however in my opinion that calls for a process of development or evolution if you please.

Q. Now could a field be unitized unless it were under one general management?

A. I believe an approach to the same results and same conditions of the ideal unitization can be accomplished through proper regulation, and approach to it.

Q. I am trying to get you off your theoretical pedestal, and down to a practical application if I can.

A. I am speaking purely as a practical matter. My experience as a production engineer has all been directly in the field not from text books or office practice.

Q. I do not mean to lecture you, but I am trying to get you away from your theory. I want to know if in the East Texas pool for instance in your opinion a reasonable approach to that ideal condition can be accomplished other than putting the field under one management?

A. Yes, sir, I believe it can, to a much better state of affairs than it is at the present time.

Q. Do you think it could go far enough to where it would be satisfactory to the extent that you would not then advocate a unitized field, to carry that field even if necessary and put it under one management?

A. To unitize that field is the final objective of all conservation efforts.

Q. Then do I understand you you would advocate in the name of conservation a unitized field to the extent of putting it under one management?

A. I advocate that as a final objective, but not at one step.

Q. Then with the various and sundry owners in the field, if you could not reach the conservation to the extent you want to reach you then would recommend that the field then be placed as one unit under one management and one ownership?

A. I am not familiar with your question.

Q. I will repeat it. If under the working of this bill and this commission you do not get force enough to your ideal of conservation you then would recommend that the field be placed as one unit under one management and one ownership?

A. I would first give it a trial under this bill and then judge the results. I do not wish to theorize, I wish to face to face strictly to sufficient and normal practices.

Q. Don't you think we have to theorize in passing this first bill?

A. Not within the limit I don't believe.

Q. Do you think the bill will go far enough?

A. I think as a starting I certainly do.

Q. Would you care to say how far you think it would come to your ideal of conservation?

A. I think for the immediate future it will accomplish the prime compass of conservation, and that any further step from there will be based upon experience gained.

Q. Under rateable takings you have to go further and accept the common purchaser of production, the common purchaser theory do you not?

A. I have not analyzed that particular thing, I have only studied the production phases of it, that is applied to the pipe line, that is delivery to the pipe line, beyond that I did not study the phases of those other bills.

Q. Study it about half a minute and see how you would answer. If you go into working rateable takings and make pipe lines take rateably they would have to store or purchase, would they not, if you force rateable takings the people that take it have to store it or purchase it, would they not, to make it practical?

A. Not necessarily have to store. I would think that if the allowable for the different fields is kept within the limit of the demand for that field I cannot conceive of anything going to storage.

Q. They have to store it if they bought it?

A. Yes, sir.

Q. Then to carry out your ideal then the common purchaser or production goes hand in hand with rateable takings?

A. I don't know what the common purchaser law, the provisions in it's present form, I don't know what that is, I haven't studied that.

Q. I am not talking about the present law, we are talking about rateable takings as you now recommend them. I asked you you will

have to accept common purchaser to that extent, will you not?

A. Let me amplify my definition of rateable takings. Rateable takings follow, in my opinion, rateable production, and if we deal with rateable production, rateable takings then conform to the production.

Q. Well, does rateable purchasing apply?

A. Certainly, if rateable production is in force.

Q. Now, if the big oil companies became mercenary, and we all admit that they either or can be, if they are mercenary, and you are going to make them take rateably and buy rateably don't you then practically make a monopoly out of the big interest, the large oil interest?

A. No, sir, I don't believe so.

Q. Why?

A. If the rateable production is carried on in conformity with the law it is obligatory that the takings will be rateable. The possibility of physical waste is produced from the producing reserves.

Q. I have heard you say that before.

A. That is the limit of my knowledge with respect to that.

Q. The reason I am asking you this question is because that I as a Legislator, credited with the authority and intelligence, which may be doubtful, I have got to take into consideration what will be the final result. Now if to secure conservation as you see it I see I have produced a monopoly, isn't that a matter for me to consider as a question of public policy?

A. Yes, sir.

Q. I was trying to get you to say whether you thought it would trend in that direction, or is liable to lead to that condition.

A. I am not familiar enough with the workings of the provisions of the pipe line law to state. I have confined my studies strictly to the production, to the reserves in the fields and the transit to the surface.

Q. If you were me, and you were able to carry out your conservation program and you still had the little guy, and the big company, wouldn't you scratch your head?

A. I, some years ago, observed rateable production on a very large scale, when there was an enormous production at Mexia, Wortham, Powell, Smackover and various other

places as a conservation officer of the United States, and we were able to assist as much as it was possible to assist producers of the fields to curtail their productions to conform to the market demand. That called for ratable production. Ratable production took place in the Salt Creek field over a period of eighteen months and was pronounced a success by the highest conservation official of the United States Government. I therefore speak with some authority when I answer your question in the negative. I do not believe it will ever constitute a monopoly.

Q. I have been requested to ask you what is the difference between ratable taking according to the way you see it and ratable rating?

A. Ratable rating?

Q. Yes, sir. Now, go ahead, you have got me in deep water.

Senator Purl: What is ratable taking, and what is ratable rating?

A. Ratable rating?

Q. Yes, sir.

A. I don't understand you. Do you mean ratable production?

Q. No, sir, ratable rating?

A. I have never heard of that term used in production. You have now used the term ratable rating.

Q. Do you know what it is?

A. I have never heard of it before, no sir.

Senator Oneal: I want to ask you two or three questions, if you will turn back to your East Texas map there, or drawings?

A. For the sake of convenience, this is North, that is South, this is East and that is West. That will save the elevation of it.

Q. Now, you have been defining to Senator DeBerry ratable taking. I would like for you to illustrate this—taking the field as you now know it, if ratable taking would be in that East Texas Field as it now exists.

A. The field comprises an area of one hundred and twenty thousand acres and at the present somewhere over twelve hundred producing wells. Those twelve hundred producing wells by reason of their various locations in the pool, of course, have variable producing abilities without producing waste. In other words, if they can produce at different rates in the field due to natural circumstances they will not all produce

the same amount of oil if held under what we consider uniform condition. Ratable taking then, for example, if any area of the field has prolific wells which can produce in a non-wasteful manner they should be allowed to take out an amount of oil in their particular area which will not endanger another area in the same field. Since there are numerous wells in that area of different producing abilities it is more economical to see that those which have the superior producing ability be allowed to produce proportionately more of the total allowable than one of lesser producing ability.

Q. What would be the effect on the wells shown in red where the water is not coming under?

A. A very good example of that: I stated yesterday one of the wells in the middle of the field, in this area in here, as far in as two miles from the west edge. You see the scale there—that is two miles. Wells have been known to make water in an area which was in March regarded as immune from any water trouble in the immediate future. Those wells on account of being fairly wide open themselves, they themselves, wide open, would not have produced water, but inasmuch as dozens of other wells off setting them and competitive producing wells were unrestricted, this is prior to the order of any regulation over there, naturally the water started rising prematurely under some wells with respect to other wells and the result is that wells producing two thousand barrels a day which showed no water showed those effects at nine thousand barrels a day. I do not mean to imply all wells would have done that at all, but this particular well was drilled close to the water table. It did not produce water with the first eighty thousand barrels of oil recovered and therefore everybody felt secure, since the first eighty thousand barrels produced no water and they said "There is no water hazard," but when the Deputy Railroad Commissioner asked for them to open up the well to observe if there wasn't a hazard in the middle of the field, there is the results in less than two hours time. Now, you might say, how about on the west edge, isn't it natural the water is inherent there and therefore not a hazard which is responsible for

lack of regulations? I might say that our four wells drilled in West Kilgore, one of them showed water, so after another one showed water, then the offset well to the east of it, admittedly a somewhat lesser hazard, decided it would be advisable to penetrate the sand very little, so instead of drilling five, six or eight feet in the sand, they drilled only eighteen inches. I speak of the Shell Petroleum Company's well No. 1 in the West Kilgore area. Late in May I visited the well with a deputized representative of the Railroad Commission and talked to the pumper and lease foreman and asked him if I might take a sample to observe its condition. I noticed in the salt water pit down below a couple of hundred barrels a day going into it, and he told me to take the sample. This is the result. Now, I say in spite of anything possible he could not have drilled much less than eighteen inches in the sand and had anything like a well, so as little as he did drill you see what the hazard is. That was at a depth of approximately thirty-three hundred and thirteen feet sub-sea, or seven feet above the indicated water level. What happened? The rapid withdrawal of water up in here, not in the water area at all, resulted in the rapid withdrawal of oil and gas in this area. Maybe the gas ratio was low, but the rapid withdrawal of an enormous amount of fluid and gas that way, no matter how apparently efficient those wells resulted in a decline in the pressure in that area. A decline means less resistance, so the water which is a potential force at all times, the water held in to equalize, tending to equalize that pressure, in its disorderly travel due to its high rate of speed it naturally treats some wells one way and another wells another way.

Q. Let me ask you this question: Under your theory of rateable taking would you have the Commission to regulate the depth into the sand that any particular well might be drilled.

A. I think it should be. When a field is being newly developed I would recommend conservative measures along those lines for the simple reason that those opposed to regulation said that there was no water in here, look at the millions of bar-

rels that have been taken out and still no water, but since then I know of several wells in there that have shown water. Some were successfully plugged back, others were not, and the number of wells producing water is increasing.

Q. Taking the field as you know it today, for further development under ratable taking, would you have the Commission to fix the depth into the sand that each new well could go?

A. There would have to be certain limits, in a law of that type drawn to be broad enough so as not to penalize certain operators, but I do think something should be regulated with respect to the depth of penetration where there is a water hazard in the immediate vicinity of a well. If you suspect there is a hazard, but don't know it, be safe. In other words, make conservative penetration and observe the results and then regulate on the basis of the observed results.

Q. Taking the field as it is now, with some of the wells into the water, others safe from water so far, what is your theory of ratable taking in that field as to fixing the amount from the wells in the different situation?

A. Those are matters for the operators as a group in all of these fields. If any one operator retained all of his oil information and did not advise with the others and exchange information, the total knowledge of the field would not be available to any operator. They have therefore set up advisory committees composed of operators of all classes, with respect to their size, the smallest independent and the larger one. Those advisory committees discuss certain problems which they have in common and advise and recommend on that basis only. They do not execute.

Q. My question is not with respect to what the operators are doing, but what you would have the Commission, charged with making this ratable taking do, in that field, in order to get economic ratable taking out of the field as it exists today, under a body authorized by this legislature to fix that ratable taking. What is your theory about that?

A. The manner in which they arrive — — — —

Q. (Interrupting) Yes, sir, for this new Commission, or the old Commission, which ever it is, what is your theory about how they would adjust it, as to the wells in existence, and new wells coming in?

A. That would be a problem of cooperation between the operators' advisory committee and the Commission which executes the orders, and to answer that question right now I would say that it should carry on in an advisory manner much in the same manner as the cooperation between the United States Bureau of Mining Engineers and operators on the public domain.

Q. Suppose some of the operators will not cooperate and the commission is still charged with that duty?

A. There should be penalties in cases like that, that after a hearing which indicates some operators are damaging the whole, but not damaging the particular property on which the well is located, there should be provision for penalties under those considerations, for this reason, that one violator in the face of a hazard can cause damage to property at several times the value of his own well.

Q. If this authority for ratable taking is given to the Commission will that not require a considerable corps of highly trained experts to go into these fields?

A. I would not say so, so much, Senator, because we have fields in Texas today that in spite of the fact the Commission has not had a corps of expert engineer, or otherwise, the operators among themselves—it is noticeable that where there are a few operators to deal with it is not difficult to get together, but where there are so many operators to deal with it becomes increasingly difficult. I mentioned yesterday of a well being 29 degrees off the vertical. The operator had never drilled a well before so he decided on an innovation in the field. In East Texas there are very many operators who are operating or drilling for oil for the first time, and it is clear that some sort of regulation is necessary. Some sort of regulation to incur penalties and enforce rules are for the common good of all.

Q. Now, would you apply the ratable taking—we have discussed it with reference to one field—would

you apply it to all fields now producing with reference to each other?

A. I think so, for this reason. In the State of Texas today we have enormous resources of valuable and recoverable oil, in west central Texas and in north Texas. Those wells were drilled and completed at a time when oil was much higher than the present price, and in as much as those were shallow fields and did not have enormous energy at the start, their rate of recovery is much slower, however, that recovery is just as certain, but they are producing unnecessarily large amounts of oil in some districts, which has acted in the form of premature abandonment in these fields that still have good resources left. That constitutes physical waste in its purest sense. For that reason I believe that in the State of Texas the conservation problem should be treated as a whole. In that case, every field should be taken into consideration by the common body. I think it should.—

Q. Now what is your theory of what would be equitable as between East Texas and the old West Texas, and other fields in Texas?

A. There is a certain demand for oil produced in the State of Texas. Oil is of different grades. Some produce naptha, gasoline, lubricating products, etc., and that may vary from season to season and from month to month; and from this you can see that for this reason the amount of oil to be withdrawn from this pool may vary from time to time, but the balance between them and the regulation of the production between pools, which does not result in waste, in a particular pool, but does produce waste in some, that otherwise would be prematurely abandoned. Under those conditions I think that some regulation should be made taking into consideration the different pools in the State.

Q. Then you do take into consideration market demand in that?

A. In my opinion market demand is the reason we produce oil, and certainly I do not understand how we could avoid market demand, because if there was no market demand there would be no production of oil.

Q. That is all, Mr. Chairman.

Mr. Stevenson: Mr. Chairman, I want to ask a question.

The Chairman: All right, sir.

Senator Stevenson: Mr. Chairman, there is some alarm among land owners that has been brought to my attention. That is this, that if this plan is adopted, a wildcatter might be discouraged from going into a new field because if he got a large well his outlet might be restricted, and there might not be the incentive there is now for wildcatting. As I understand this rateable taking would not apply until there was a number of wells in the field, and waste would not necessarily be controlled until there was a number of wells. I would like to have a direct answer to that question.

A. I can say that I concur with you entirely. Until a few wells are drilled in the field, it is difficult to measure the physical hazards which result in physical waste. Therefore, it would not be a deterrent to wildcatting or the development of new resources at all.

Questions by Senator Woodul.

Q. This map shows wells one, two, three and four. Wells one, two and four, are wells drilled over the water area, and well number three is drilled beyond the water area on either side?

A. Yes.

Q. About equal distance from the edges of the water table on the two sides of it?

A. Yes, sir.

Q. Is there a water hazard in well number three left wide open?

A. Well, number three was the one away from the water in each case and wide open—is not an immediate water hazard, but the regulation of that well is necessary to control the water on both sides of it, because being a member well of a common pool, any action at that well has a reaction on the pool as a whole. The magnitude of that reaction depends upon the closeness of that well to other wells, and its proximity to water hazards.

Q. I take it that well up there is what you are talking about.

A. Yes, sir, that is the Lathrop discovery well.

Q. Now, that well is near the upper edge of the oil deposit in the pool; is that true?

A. Yes, sir.

Q. As I understand it, you had another exhibit yesterday.

A. If you will pardon me, I have it right here at hand.

Q. That is exhibit A. Well number four?

A. Yes, sir.

Q. Well, now, if number four, left wide open to flow, would that well number four have a relatively or proportionately higher recovery if run unchecked than it would if pinched in under the ratable taking theory?

A. Pinched in under ratable taking or under ratable production practice, it would have more, for this very simple and widely recognized reason; in no pool in the United States to date has there ever been gas reserve sufficient to recover all the oil. Therefore, it is inherent that by our methods of production we have insufficient energy to drive all of the oil into the hole by the natural gas energy. The function of gas is to drive oil into the hole and lift it, but if it fails to show the flow that is of no consequence, but if it fails to deliver all of the oil into the hole, that is physical waste.

Q. Well, is it possible to conserve the gas pressure in well number two so as to give it the highest potential production possible, and at the same time to throw it out of line with other wells in ratable takings?

A. Well, I would say if you have the privilege of throwing it out of line with other wells, if you throw it out of line with other wells that are being pinched, if there is pinching of those other wells, which maintain the reservoir pressure, will cause a super production to that well to which is not equitably entitled.

Q. Then well number two is in a less advantageous position than well number four with reference to their ultimate recovery?

A. Yes, sir.

Q. Then a ratable taking law would restore to well number two some of the advantages that naturally adhere to well number four?

A. If you are going to deal with the subject of conservation, then we must deal with the pool as a whole. If we are dealing with the subject of conservation we must deal with the pool as a whole, as any group of wells have a reaction on other wells in that neighborhood.

Q. So, when you talk about conservation, you have in mind the highest possible recovery from the entire group?

A. Yes, sir.

Q. As a unit?

A. Yes, sir.

Q. Then as a purely State standpoint, taking the proposition as a whole, taking no interest in any individual operator, theoretical or otherwise, if the State comes in there and attempts to protect number two from the water hazards of improper development and operation by number three—

A. That protection is equitable,—therefore I assume he is entitled to that State protection.

Q. Then would you say that if number four's well is operated on his premises in such a way as not to impair the ultimate recovery from the field as a unit, but so operated as to give the owner of the premises on which the well is operated, a relatively high recovery of oil, is it inequitable to number four?

A. That higher recovery is at the expense of a lower recovery somewhere else. If you reverse the principle and apply the same picture, do you believe this man should recklessly drill into the water because he could get more oil directly. It will be bringing oil to his well at once, but it will be damaging to those other wells. I think the man up structure needs the cooperation of the man here, and the man here needs the cooperation of the man over here; that is common knowledge.

Q. That is just on a theoretical question of equities and not on the ultimate recovery of the field as a unit?

A. I am speaking of ultimate recovery in the field.

Q. I am not quite clear; I understood you to say a while ago that if well number four was so operated as to give it the greatest output recovery, and at the same time not be a hazard to the others in the field—

A. If you will give it its ultimate recovery and not be a hazard to any other ratable production is the only manner in which it would have to be produced.

Q. Ratable production then would reduce the amount of oil you would ultimately recover from number four?

A. No, sir. It more efficiently utilizes the gas energy within the drained area of his well and he

would get more ultimate production than if he flowed the well wide open.

Q. I understand; the point I am trying to make clear in my mind, would it be possible for well number four to be so operated and the gas pressure to be so conserved that he would get a greater recovery than he would to flow it wide open and take his flush production?

A. No, for this reason, because, every well has the ability to drain a certain distance efficiently. If the well flows wide open while the wells around it are pinched in, the wells producing wide open drain beyond their efficiency, and the other wells being restricted or pinched in, the very condition you state is very conducive to waste to allow one well to flow open and the surrounding wells to be pinched.

Q. Now, turning aside from that for just a minute.

The Chairman: Senator, will you speak a little louder, I am afraid these reporters are having trouble hearing you.

Q. You stated yesterday to the committee that you were now employed by the central proration committee?

A. Yes, sir.

Q. Do you have any other connection or outside employment than that at this time?

A. Not on resident employment, no, sir.

Q. Well, on any other employment?

A. Well, I still hold relationships to the Fain-McGaha Oil Company—

Q. All right, the Fain-McGaha Oil Company, that is at Wichita Falls, Texas?

A. Yes, sir.

Q. Do you know whether or not that corporation is financed by the Humble Oil and Refining Co.?

A. I do not know about their financial connections at all; no, sir.

Q. All, right.

A. They are producers of oil, and they have had consistent revenues from oil ever since I have been with them. I assume their revenues from their own property constitutes the bulk of their financial revenue.

Q. Have you not heretofore had connections with the Marland?

A. I did some years ago; yes, sir.

Q. When was that?

A. From August, 1926 to Novem-

ber of 1928, for about two years or a little over.

Q. What particular part of the Marland's operations were you connected with, and where were you working?

A. I was 80 per cent of that time working in west central Texas at their Breckenridge headquarters, covering production from the Jones County in West Texas to the Archer County field in the north, and in cooperation with the Shackelford County production at the Cook Ranch.

Q. Were you with Marland in the panhandle area?

A. Yes, sir, that was where I was first when I came with them in 1926.

Q. In connection with your duties with the Marland in 1926 did you advise them to use the geological methods as you have explained them here to the committee?

A. As production engineer I certainly did.

Q. Will you tell the committee with what success the Marland met in the use of your method of production?

A. I was assigned to the central Texas office at Breckenridge. I was assigned to start the re-pressuring work on the Cook Ranch in Shackelford County. The properties were operated by the Rosier-Pendleton people, who doubted the possibility of returning the gas to the pool in the early life of the pool when the gas was available. I carried on experimental work over a period of six weeks, attempting to demonstrate the feasibility of that process, and it met with such success that they promptly installed a large plant and since that time have never wasted one thousand feet of gas, but turned it back to the ground, and at the time now when the market is flooded with oil I am proud to say that property is operating 100 per cent in the interest of conservation.

Q. Mr. Foran, it is not my purpose to embarrass you—

A. I am very glad you asked that question, because my work as a petroleum engineer nine years has been experimental in the practice of conservation and its effects both as a government engineer and as an engineer for private large and small companies.

Q. Why did you leave the Marland employment?

A. No, reason, I voluntarily left the Marland employment. There was no cut-down in their organization when I left.

Q. Was that because you had more lucrative or satisfactory employment?

A. That's it exactly.

Q. What is the thing that took you away from the Marland if you don't mind telling us?

A. It was an opportunity to develop further my studies along those lines.

Q. I see. That is all.

Questions by Senator Neal.

Q. What is the basis on which to establish ratable taking?

A. The basis on which to establish ratable taking, did you say?

Q. Yes.

A. I assume you mean ratable production. Ratable taking may be pipe line taking.

Q. Do I understand that these ratable takings are established on the producing ability of the wells?

A. Yes, sir. Provided physical waste does not occur.

Q. In other words, the ability of the well?

A. That is one of the considerations, yes. I believe also that the undeveloped proven acreage around the well is also a factor to be taken into consideration, because if a well has no interference in drainage it should drain over a long period of time and should produce more oil. Out of a lot of wells drilled on say a 660 foot spacing program, the safe production from a well there would naturally be a greater daily rate than wells drilled closer together.

Q. Who determines that now for the State and who would determine it under this bill?

A. Well, that would have to be worked out. The present work done on these bills is not a final solution to the conservation problem. It is so large that it will require a great deal of time, and progressive steps from time to time must be employed, but as a starting point the well's ability to produce oil, the acreage surrounding that well, the spacing of the wells, and the demand for oil in the State of Texas as a whole, all those things must be considered and weighed.

Q. May I ask this, about the East Texas Field; how many barrels per day could you take out of a 10,000 barrel without injury to that well, and to adjoining wells?

A. When you say adjoining wells, I assume you mean offsetting wells at the conventional 300 foot spacing. You could take out nowhere near 10,000 barrels without affecting the offsetting wells.

Q. You would have to consider that?

A. Yes, sir; in taking 10,000 barrels from that well an enormous decline in reservoir pressure immediately surrounding the well is necessary to set up enough force to drive that much oil into the well, and as that oil is driven into the well, gas is released, and gas can move through a sand faster than oil; that is the reason the fields in this country are depleted of their gas before we recover all of the oil.

Q. Did I understand you to say in the matter of proration that each field should stand by itself?

A. The ratable—

Q. That ratios should prevail in different fields; did you say that?

A. No. Not if we consider conservation in the State of Texas as a whole. Certainly we should treat production as a whole. If we do, we can't isolate certain fields and say they bear no relationship to the State as a whole; I believe every unit in the State bears a direct relationship to conservation as a whole.

Q. Well, I think I misunderstood you a few minutes ago in answer to the question of Senator Neal. I thought you said that each field should stand by itself.

A. I meant to say, or imply, that each field is given an allowable, the maximum amount that will not disturb the functioning of the conservation statute.

Questions by Senator Martin:

Q. Following up the questions Senator Stevenson propounded to you a while ago with reference to wildcatting, you said that ratable taking would have no effect on that?

A. I would say no effect on the discovery well and the immediate few wells following; I meant to imply that.

Q. Well, how about ratable production?

A. Ratable production would not, no.

Q. What is the difference between ratable production and ratable taking?

A. Ratable taking is a taking of the oil off of the lease without storage. Ratable production is the proportionate production—is the production drawn from the pool, in proportion to the well's ability to produce oil, the amount of acreage around the wells and the waste factor taken into consideration.

Q. In ratable taking you would consider the injury to other wells, would you not?

A. Yes, sir.

Q. And then you would apply ratable production to the entire State in order to effect the price wouldn't you?

A. No, sir.

Q. What effect would the East Texas Field in running wide open have on the Breckenridge or Mexia Field?

A. If they ran wide open I would assume oil would be produced in excess of the public's ability to consume it.

Q. Then the question of consumption would determine the price?

A. I mentioned that this morning.

Q. Then you would apply ratable production in matters of amount of consumption that the world will need and that will affect the price?

A. Not for the purpose of affecting the price, and I will prove it to you.

Q. Well, never mind that.

A. All right. All right.

Q. Now, in answer to the questions propounded by Senator Stevenson, you said it would not have any effect on wildcatting. If you are going to limit production, why would ratable production have an effect on wildcatting?

A. Wildcatting is the operation of drilling a well. I assume under these conservation laws nobody is denied the privilege of drilling a well.

Q. If production is cut down until no field is producing as much oil as it is capable of producing, then if a man—then a man would not want to drill a well as a wildcatter due to the fact that he knew

when he found oil he could not sell it.

A. That would be true, sir, but this bill provides for the spacing of wells, and that to me implies that if the spacing is increased in wells it allows more wildcats to come in to efficiently serve the State, instead of flooding the State and causing waste.

Q. Taking the State as it is now, if every oil unit in the State were choked down, and it is governed by ratable production, you say—

A. Uh huh.

Q. Producing as much oil as the world needs, what incentive could there be for any man to drill a wildcat well anywhere in the State when he knows he is going to be choked down and not permitted to produce any oil at all?

A. I don't assume, sir, that the ratable taking law restricts anybody from producing oil at all.

Q. Then you say ratable production and ratable taking would be the same?

A. The difference between them would be this; ratable production would represent equitable withdrawals from the reserve.

Q. Wait a minute right there. That means with reference to all the different fields in the State, doesn't it?

A. Yes, sir. They are all a part of the picture of conservation, in my opinion.

Q. Then ratable production would apply all over the entire State?

A. Yes, sir.

Q. Over all fields?

A. Yes, sir.

Q. Now what is your ratable taking?

A. The ratable taking is for the prevention of oil going to storage.

Q. How is that?

A. For this reason, to prevent unnecessary storage, which I am sure is physical waste, that will require, if you please, a little explanation.

Q. You said that was waste? Economic waste?

A. No, sir. Not in my opinion. As a production engineer, it is not, it is physical waste.

Q. Why?

A. Because underground storage permits no evaporation of oil. The finest storage on the surface permits evaporation. In this, the evaporation

of a fixed reserve of oil is physical waste.

Q. Then you would allow some commission to say to a man who has the oil in the ground that he could not take oil from that, or if he did take it, he would be limited to such an amount as would be governed by the production throughout the State?

A. No, sir, I do not.

Q. Why not?

A. I recognize this. That there is a certain demand or consuming ability of the world at large to take care of Texas oil. In this connection I would say, any oil produced in excess of that amount must obviously go to surface storage.

Q. Let me ask you this question. Is that oil under ground there, from a geological standpoint, it is not transitory at all?

A. Under ratable production the original equilibrium is disturbed but very little.

Q. Before penetrating any territory, is oil stationary or transitory?

A. It is stationary for the simple reason that a pressure of 1500 lbs. per square inch has prevented it penetrating the beds on either side of it, when it has reached its limit. If it has not reached its limit I assume you will find some oil above it in the overlapping bed.

Q. Suppose it has traveled for many miles, then you would have oil in the course of moving, and a year from today you would not have it?

A. Let me state something about the speed at which that oil moves.

Q. Well, regardless of speed, as a matter of fact it does move, doesn't it?

A. No, sir. Not in the practical sense of the word move.

Q. With all of that tremendous pressure you say that would not force the oil on?

A. I would say that over a period of 10,000 there would be an imperceptible change in the position of that oil. I don't think any geologist would contradict that statement. I say there would be no perceptible change.

Q. Well now, in the East Texas field you say there is no water on the east; is that right?

A. Yes, sir.

Q. What, in your judgment, keeps the water from the west from

continuously pushing that oil on east?

A. It does continually push the oil on east, but I explained yesterday that it pushes the oil in the tight portions of the sand at a slower rate than it pushes it through the looser portions, therefore, in the process of pushing it through, if it moves more rapidly in the loose portion, it leaves the tight portion surrounded by water, which is forever irrecoverable.

Q. That condition would prevail if there was a hole, or no hole bored into the sand?

A. No, sir.

Q. Didn't you find pockets of oil and gas scattered around?

A. You don't find oil directly beneath the water in contact with a porous bed in a static state.

Q. Isn't that accounted for geologically, that as the oil was pushed away from the place where it was, that the soft strata permitted the water to penetrate it, and you find in those soft pockets, and you find those soft pockets in there. Isn't that true?

A. That is not true for this reason.

Q. Doesn't geology teach that?

A. No, sir. In every pool where you drive down you find that the original oil and water contact is the same; therefore, your assumption that you could have pockets of water below or above the oil level never happens.

Q. If that oil for millions of years in East Texas has been continuously pushed forward or eastward by the force of the water from the west, don't you think that, geologically speaking, that there are pockets of oil back continually through the East Texas field, back as far as that oil has been pushed?

A. Certain amounts in the upper part, but not in commercial quantities.

Q. I am not talking about commercial quantities.

A. Well, if it is not in commercial quantities, I would not consider it as referring to the case at hand.

Senator Martin: If your Honor please, it is after 12 o'clock; I cannot get through with the witness in less than thirty minutes.

The Chair: We will stand adjourned until 2 o'clock.

Thereupon at 12:10 o'clock p. m., the committee recessed until 2 o'clock p. m. same day.

2 o'clock p. m., July 23, 1931.

The Chairman: Senator Martin, I believe you had the witness when we adjourned; are you ready to proceed?

Senator Rawlings: Will the Chair call the roll in order to see if we have a quorum present.

The Chairman: We are due a recess and we can not enforce a quorum if they do not care to be here.

Senator Rawlings: I think the Chair ought to exercise some effort to have a majority of the members present during the time this testimony is being given.

(Upon calling the roll the Chair announced there were nine members present and the committee would proceed.)

The Chairman: Senator Martin, you may proceed.

Senator Martin: Does the witness remember what the last question was when we adjourned; well I will start in again, I want to pick up where I left off if I could. If I understand you correctly, Mr. Foran, you would use what is known as ratable takings to protect the interest of each and everyone in any particular oil field where there is production, is that right?

A. Yes, sir, that is one of the functions of it, or one of the purposes.

Q. Now then, if I understand you right, you would use ratable production to protect the markets for the oil, wouldn't you?

A. Well, there seems to be a little difference of opinion between the definition of the term "ratable takings." When I use the word "ratable takings," which I did yesterday and this morning, I referred to ratable takings from the stand, which is the same as ratable production.

Q. You used the term "ratable takings" as you would apply to any particular field?

A. Yes, sir.

Q. Insofar as it protects the properties of the other fellow who owns interest in that field, or either protects a man in the reasonable and geological manner of handling his home product?

A. Yes, sir.

Q. You do that to conserve the oil in that particular field?

A. Yes, sir.

Q. And you would use ratable production,—you would apply ratable takings to each and every field in the State, wouldn't you, as you come to it, as it should be applied to that particular field?

A. Yes, sir.

Q. Then you would use ratable production to cover the price, wouldn't you.

A. No, sir, I don't think I should enter into it at all.

Q. If there is any demand for oil there would be a price for it, wouldn't there?

A. Yes, sir.

Q. And if there is no demand there would not be any price, would there?

A. That is true.

Q. Then you would apply ratable production in keeping with the demand, wouldn't you?

A. Yes, sir.

Q. And in doing that your object would be to get the price, wouldn't it?

A. Not necessarily for this reason,—

Q. Well, that is all right.

A. Well, no, sir.

Q. Then you say ratable production would not be for the purpose of governing the price?

A. May I finish the last answer?

Q. Well, all right.

A. I want to be sure I get your question right. You asked me if I would recommend a system of ratable takings, one of the purposes of which would be to maintain prices, or suitable prices?

Q. I didn't say ratable takings; I said ratable production.

A. All right, I maintain this that a lower price for oil might return greater profits to your property if you produced it in such manner as to get a greater ultimate recovery, that therefore price in my opinion is not the dominant factor in calling for ratable takings or ratable production.

Q. In any event you would apply the rules of ratable production in order to govern or take care of the profits?

A. No, sir, in order to affect conservation, if that fortunately affects the property, even if it doesn't, con-

servation is an obligation to the public in my opinion.

Q. And you would conserve it by keeping it in the ground if there was not such a market for it as this commission, which might be created, would think it should bring?

A. Well, I say they might. I assume that commission would be a qualified commission who could determine properly what amount of oil should be taken out in order to avoid physical waste.

Q. Upon what facts are you basing your assumption?

A. On the facts as told to that commission from the field.

Q. You are assuming that they will do certain things here, you don't know what they would do, do you?

A. Oh, that is a human possibility, I will admit that.

Q. Now, I want to go a little further in applying the rule of ratable takings. If a man owns a hundred acres of land in East Texas from which he is getting the oil, so long as he was not extracting that oil in such manner to interfere with the rights of his neighbor or to destroy his own production, so far as his takings are concerned, you would let him take all of it in one day if he could, is that right?

A. Well, I cannot conceive of that being a condition encountered, that is not the practice.

Q. If he could take it all in a year, you would say let him take it all in a year so long as he did not interfere with his neighbor or does not damage the resources?

A. That is so impossible to do I cannot conceive for that answer.

Q. What would be impossible?

A. That one man should extract his oil in such time and not affect his offsetters.

Q. You were theorizing this morning,—you cannot conceive of a man extracting all of his oil from under his land in such manner as to not hurt his neighbor?

A. There might be property lines and boundaries on the surface but there are no such things as property lines underground, and this oil can move from one place to another.

Q. I will ask that question this way. If a man has a hundred acres of land over there and he has one well right in the middle of it, and we are assuming that it so far from the property lines that it would not

draw oil from his neighbor's property, then so long as he draws the oil from that one well in such manner to not interfere with the rights of his neighbors and not destroy what he himself has there you would not say that you should interfere with him at all, just let him run?

A. You are assuming something which does not exist and which cannot exist.

Q. Oh, well, you know that it can be such, that a man can extract all of his own oil from under his ground and not interfere with his neighbor?

A. No, sir, I do not know it.

Q. What would you do about the King Ranch, where there are hundreds of thousands of acres in it; suppose a man had a field in the middle of that ranch that he was expecting oil from that field, where he could not interfere with the rights of his neighbor, say there are a million acres in the ranch, now as long as he is drawing oil from that field, and is not interfering with the rights of his neighbor in doing it, and doing it in a way so as not to damage his own output or damage his field at all, you would say let it run full force?

A. If he could take out his oil and gas without taking the energy, I say yes, but I cannot conceive of that.

Q. Who would you want to pass upon that question, you say if, when and who would you want to pass upon the question when he is doing that?

A. Please let me answer the question you asked before; if you had done that I am sure you would not have asked the last question. I think you must be confused.

Q. I don't think I am, but go ahead.

A. My interpretation is evidently not being carried to you.

Q. Go ahead.

A. There are three things which an operator in taking oil and gas, even without the presence of water, he takes out not only oil and the physical gas but the invisible energy, it is the energy which enables the neighboring operators to recover their oil and if you take his energy away from him, although it is invisible, you injure his property, although you did not injure your own

property. That is the point which I wish to make.

Q. I am assuming he is so far removed from his neighbor that it would be impossible to interfere with the energy that might belong to his neighbor in extracting his oil. As long as he does not interfere with his neighbor, as long as he does not interfere with his neighbor and as long as he does not extract his own oil in such manner as to destroy the field, would you say let him get every gallon he could out of the ground?

A. If his well is in such condition that it is impossible to injure his neighbor, certainly, surely.

Q. That is what I wanted to get at. Now, this section in this proposed bill that has been handed me, Section G. Read it and tell me if you subscribe to that? That is one of the definitions of waste?

A. Waste incident to oil resulting from the production of crude petroleum or natural gas in excess of the reasonable demand for such commodities for current consumption for use within or outside of the State of Texas, plus such amounts as are necessary for building up or maintaining reasonable reserve. I would state that the reaction to the reservoir and its results on physical waste should be included, or should be considered.

Q. I am asking you to please answer that question directly, yes, or no. Do you, or not, subscribe to that?

A. I do not subscribe to it without reservation.

Q. What reservation would be put in it?

A. I think it is impossible, in my opinion, to take out oil or gas, out of the ground, without taking energy. Inasmuch as energy is invisible and a component of the entire pool, certain consideration and reservation must be made before an operator be allowed to produce his well unrestricted regardless of what part of the structure he may be located in.

Q. I shifted the subject on you a little. Listen to this: Waste incident to or resulting from the production of crude oil or natural gas in excess of the reasonable market demand for such commodities for current consumption for use within

or without the State of Texas. Do you or not subscribe to that?

A. I do subscribe to it.

Q. You would want that as one of the definitions of waste?

A. Yes, sir, that is one of them.

Q. Then you say when the market demand is not such as to require the right kind of price, according to the ideas of whoever might be in power, you would say that is waste, if taken out then?

A. I did not make that statement and do not make it.

Q. Who is going to pass upon the question as to when the public has got all it needs and when there is an excess?

A. A number of things may affect that. Probably new pools may come in in other states, wildcatting goes on. The situation might even be in this manner, that the Kettleman Hill Pool in California might be thrown open under the belief that each operator doesn't injure his neighbor. In that case it may displace some of the market demand for Texas oil and cause it to be cut, or reduced.

Q. That has nothing to do with waste?

A. Yes, sir, it has, very much to do with it.

Senator DeBerry: In answer to the question in which Senator Martin read a section from a proposed bill here in which the witness testified he did subscribe to it, I want to be sure that has got in the record.

A. I am assuming the stenographer took it down as it was said.

Senator Pollard: He is a good stenographer, he got it.

Senator Martin: You said something about working for a certain proration committee, or company, what is that?

A. The Central Proration Committee of Texas.

Q. Is that an association, partnership, corporation, or what is it?

A. It is merely an advisory body made up of operators in all parts of the State who have offered their co-operation, their assistance in giving the truth about records, production records, and so forth, in order that that committee assists the Railroad Commission in compiling the facts and pertinent matter to the situation as it stands today. They are purely an advisory body and they have no executive powers whatsoever.

Q. Now, you say they have no powers whatever. Are there representatives of different companies that are members of that advisory committee?

A. Yes, independent operators by themselves, and others.

Q. Can you mention some of the others that belong to it?

A. Well—

Q. (Interrupting) I might ask it this way. Does the Magnolia Petroleum Company contribute to the fund that keeps this committee going?

A. I really don't know.

Q. Does the Standard Oil Company?

A. I don't know.

Q. Does any major company that you know of?

A. Operators as whole do, large and small.

Q. Who signs your checks?

A. The secretary of the Mid-Continent Oil & Gas Association.

Q. Where is it's headquarters?

A. Dallas.

Q. Who is at the head of it there that we might learn who these people are?

A. Mr. Laney, I don't know his initials. May I answer your question a little more fully?

Q. Is it Joe Laney?

A. I don't know. May I answer the question a little more fully?

Q. All right, go ahead.

A. The Mid-Continent Oil and Gas Association recognizes neither major companies, independent companies, nor individuals, in its membership.

Q. I want to get the personnel of the membership. That is what I want to get at.

Senator Small: I will state for the benefit of the Senator that that information was all printed in the House Journal. It came out in the testimony as to who contributed the funds from which his salary is paid, and it's officers, and everybody else. It is in the House Journal.

Senator Martin: Do you offer that as a record at this time?

Senator Small: It is in the House Journal.

Senator Martin: Do you offer it as a part of this record that is being made here?

Senator Small: No, sir, I do not offer it. I just thought I would

call your attention to it. You can call for it if you want to.

Senator Martin: Did this witness testify to that in the House?

Senator Small: I don't think this witness has been on the stand there.

Senator Martin: I want to hear this witness testify.

Senator Small: It is just cumulative and encumbering the record.

Senator Martin: We were interfered with and I will ask the stenographer to refer back to where the witness was at the time we were interrupted. Read the last question.

(Thereupon the reporter read the following question: I want to get the personnel of the membership. That is what I want to get at.)

A. I am giving you all the information I have at hand with respect to the question of the matter upon which you are questioning me. I am a production engineer by practice and in carrying out my duty I did not investigate the facts except that they were a reputable body of independent individuals and companies.

Q. Now, the thing I want to know is: You say it is a reputable body. I presume from that you investigated. What is the personnel?

A. Hundreds of operators.

Q. Who?

A. The list is so long I don't know all of them.

Q. Can you name some?

A. Yes, sir.

Senator Small: Here is a list of them.

Senator Martin: I think the witness is able to take care of himself.

Senator Small: I will give you the list.

Senator Martin: I am not asking for it. If it is already printed in the House Journal and if he is just going to read from that, I do not care to have it read.

Senator Loy: We don't want the House Record.

Senator Martin: I don't know what the source of that is.

The Chairman: Inasmuch as the witness has not testified to the question I think it is pertinent at this time.

Senator Martin: I will ask the stenographer to read the question again.

(Thereupon, the reporter again read the following question: I want to get the personnel of the member-

ship. That is what I want to get at.)

A. I don't know all of the personnel or membership in that organization.

Q. You could name part of them, couldn't you?

A. I wouldn't want to name a list and miss somebody and name somebody that is not in it.

Q. You said that you went far enough to investigate it and knew it is composed of reputable concerns?

A. It is.

Q. You certainly went far enough to know who composed it?

A. Alright. I know that the leading independent groups in Texas are members of it.

Q. Who are they?

A. One is the Roeser Pendleton Corporation.

Q. Who on this committee is from that corporation?

A. Mr. Charles F. Roeser.

Q. Another one?

A. Mr. Robert R. Penn.

Q. From what company?

A. The Penn Oil Company, his own company, an independent company.

Q. Give us another one.

A. E. A. Landreth of the Landreth Petroleum Corporation.

Q. Do you think of another one? Would you be willing for me to assist you?

A. Yes, sir.

Q. Does the Pure have a man there?

A. I am not sure, but on your statement of fact I will accept that.

Q. I didn't state it as a fact.

A. I don't know.

Q. Does the Humble have a man there?

A. I don't know.

Q. Does the Texas?

A. I don't know.

Q. Does the Magnolia Petroleum Company?

A. I want to be sure, are you speaking of this Central Committee or the association?

Q. I am speaking of the Central Committee, the ones you said you are in?

A. I don't know whether they have, or not.

Q. Does the Gulf?

A. I couldn't say.

Q. Does the Standard, or any of

its subsidiaries that you know of?

A. I don't know.

Q. Who signs your check?

A. I stated in the record Mr. Laney, of the Mid-Continent Oil & Gas Association.

Q. Who have you been working with directly in this field work that you do on the subject of production?

A. I have no immediate superior to whom I go for daily instructions or weekly instructions. At the time I accepted this position — — —

Q. (Interrupting) Just a minute. To whom do you make your reports?

A. Primarily to the Railroad Commission of Texas and their Deputy Supervisor in the field. I work with their supervisor in cooperation with them.

Q. In other words, somebody else here on the outside has been paying you your salary and you have been working in this field and making your reports to the Railroad Commission of the State of Texas; is that right?

A. That is a fact.

Q. All right. This man Penn that you mentioned here—he is chairman, is he not of some Proration Committee?

A. Yes, sir, he is Chairman of the committee of which I am speaking.

Q. Now how many of these different companies whose names you have called as being members of this association or whatever it is you are working for—how many of them are operating in the East Texas field?

A. Mr. Penn has proven production in the East Texas field. It may not be drilled on yet.

Q. All right.

A. Mr. Roser of the Roser-Pendleton Company.

Q. All right.

A. Their company has considerable production.

Q. All right.

A. And of the others I don't know.

Q. But out of all these dozens and dozens of companies that you say form this association to which you belong you have named two men.

A. The Central Proration Committee is not made up of dozens and dozens of corporations.

Q. Well, you said hundreds of companies and independents.

A. The Mid-Continent Oil and Gas Association I said is made up of independents and majors.

Q. Why do they pay you then?

A. I presume because they want some unbiased information with respect to physical waste. The Railroad Commission has asked them, I presume, to assist them in the matter.

Q. You don't know whether it is true or not?

A. I know this — — —

Q. But I say you don't know.

A. Yes, sir, I do know.

Q. Well, do you say it is or not?

A. Please let me answer your question.

Q. Well, I want to know this; has the Railroad Commission called on them for advice and have you been delegated to give them advice?

A. May I have the privilege of answering the question?

Q. You can answer that without any explanation, it seems to me.

A. Is your question complete?

Q. You can answer that question "yes" or "no," please.

A. I could not.

Q. You could not—you can not?

A. I want to tell you a little more carefully just what the relationship is.

Q. Well, I think I have determined the relationship—you have been employed by the Central Proration Committee to gather information and to deliver it to the Railroad Commission; that is right, isn't it?

A. I don't gather information only.

Q. Well, I am not caring whether you gather cows and other things—you do gather information and report that to the Railroad Commission?

A. I cover the field with one of their representatives, one of their paid deputies of the Railroad Commission merely as an assistant, offering services to him.

Q. All right. Is the other fellow a geologist?

A. I assume if he is capable of supervising a district as large as East Texas he is qualified whether he be a geologist, a petroleum engineer, or a practical operator.

Q. I will put it this way; don't you know he is a geologist?

A. No, I never asked him what his particular qualifications were.

The Chairman: I think the qual-

ifications of the other man are not involved in the case, Senator. I think you are going a little far afield on that. I would confine the questions to the qualifications of the witness.

Senator Martin: If your honor please, I think I have the right to inquire—we are accepting or some probably will accept the witness' testimony. I want to know how he is working, for whom he is working, who is paying him, and whom he is making reports to. Now, the question is if the Railroad Commission is derelict in its duty and puts a man in the field who doesn't know his business and they call on the oil companies to furnish a man who is competent we ought to know that fact.

The Chairman: Senator, the point I make is about one witness passing on the qualifications of another.

Senator Martin: Well, Your Honor, I would not have to be a lawyer but a few minutes before I would know. That is one of the first things I would ask him, is whether or not he is a lawyer and where he got his schooling and what his line of thought was, but in deference to the ruling of the Chair I will withdraw that.

Q. Then you don't know whether he is a geologist or not?

A. Will you permit me to amplify on your question—

Q. No, sir.

A.—without being disturbed?

Q. You could answer that you do or that you do not know—answer "yes" or "no," I don't see why you have to expatiate on that. Do you know whether he is a geologist or not? If you know you certainly don't have to expatiate.

A. If you please—

Q. If you don't know, say so.

A. There is more than one supervisor in East Texas. Of which man do you speak?

Q. I am talking about the man you work with.

A. I work with both.

Q. Well, are both or either of them geologists?

A. I don't know.

Q. That is all right. Now what are their names?

A. Mr. Jack Elliott.

Q. Jack Elliott—all right. Who else?

A. Mr. J. L. Martin.

Q. J. L. Martin?

A. Yes, sir.

Q. M-a-r-t-i-n?

A. M-a-r-t-i-n.

Q. I would love to congratulate him on his name. (Laughter.) You could not say whether he is a geologist or not?

A. No, sir, I don't know. May I—

Q. That is all I want to know. Now you mentioned this Penn Company and some other company has working over there in that field—

Senator Woodward: Mr. Chairman.

The Chairman: The Senator from Coleman.

Senator Woodward: Well, he don't want to know the answer but some of the others here who are jurors would like to know, and I suggest he be permitted to answer in his own way.

Senator Martin: Your Honor, I am asking for answers short and simple so I may understand in monosyllables, "yes" or "no." Now then, if they want to bring some further explanation from the witness they can take a note of it and at the proper time get him to answer it. My skull is a little thick.

Senator Woodward: I am asking that the witness be permitted to make his answer.

The Witness: Mr. Chairman, may I have the privilege of answering the questions in my own mind to the fullest extent, when in my opinion it calls for an answer that may properly interpret before my hearers here?

Senator Purl: Mr. Chairman.

The Chairman: The Senator from Dallas.

Senator Purl: May I suggest that any time the witness don't want to answer he should say so and go ahead to another question. We don't want to coerce him. If he don't want to answer, let's go ahead.

Senator Woodward: He has indicated no disposition not to answer.

The Witness: I would like to answer fully.

The Chairman: The Chair feels the witness is privileged to answer in his own way and if it is not satisfactory the question can be repeated in a different way.

Senator Purl: May he not be re-

quired to answer and then make any explanation he wants to?

The Chairman: Senator, the Chair would hold that the witness has his own way of answering the question. If the one who is questioning him is not satisfied with the witness' answer, he can repeat it or place the question in another way. I would not want to restrict the witness in his answer: I think it is not within the province of the Chair. If the question is not answered directly the question can be repeated.

Senator Martin: You Honor, I would like to suggest that some of the questions could easily be answered "yes" or "no." Now, as stated a moment ago, I am not able to take these long drawnout explanations and from those explanations deduct the answer "yes" or "no." I think the witness could answer the question as the question itself calls for an answer. Now, when I ask the question, "Do you know whether or not he is a geologist?" If he knows, he knows he knows; if he does not know, he can certainly say "no", and that is all on earth I want him to say, and when that is done, if somebody else wants to bring out something else, let him do it.

The Chairman: Senator, the Chairman doesn't know the mind of the witness.

Senator Martin: Well, I am simple minded and it would require an answer "yes" or "no" for me to understand what he said.

Senator Woodward: Senator, let me remind you that that is not the witness' fault. (Laughter).

Senator Martin: Well, that is what I want to bring out.

Senator DeBerry: Mr. Chairman.

The Chairman: The Senator from Red River.

Senator DeBerry: Is it the ruling of the Chair that when a Senator asks a question that the witness be allowed to answer it in his own manner and to what extent he cares to, regardless of whether the asker of the question wants to listen to his speech or not?

The Chairman: Senator, not for an indefinite period, no; a reasonable length of time should be granted the witness to answer and then if he doesn't want to answer he can decline; that is for the witness. The Chair does not attempt to gov-

ern how the question should be answered.

Senator Martin: What was the last question, Mr. Reporter?

(Thereupon the Reporter read the last preceding question.)

Q. Do these particular companies, the two that you have mentioned here—do they have geologists in the field?

A. Do you mean the Railroad Commission's two individuals?

Q. No; I say these two particular companies—that is, the Penn Company and the Roeser—I believe you called the name of it.

A. Roeser.

Q. Do they have geologists there?

A. I believe they do.

Q. Mr. Foran, is it a fact that each and every oil company that is doing business and operating in that field has its own geologist there?

A. No, I don't believe they have.

Q. Can you answer one that has not?

A. I have visited several wells which were not completed in such a deplorable condition that certainly no geologist—

Q. As to whether a well is completed in a right condition or a deplorable condition would be a matter of opinion?

A. No, sir; I think it is a matter of common knowledge.

Q. A matter of common knowledge?

A. Yes, sir.

Q. You don't know whether there is a geologist on the job when a well is completed or not?

A. No, sir—I assume there could not have been in the case I am referring to.

Q. Does a geologist have anything to do with the drilling?

A. He does, in my opinion.

Q. How?

A. Most certainly in wildcat wells.

Q. Well, that is a proven field over there.

A. Well, the water table is a matter of accurate determination, which means keeping the well vertical; that is, the depth of the well expressed in feet is the true depth of the well. Some small companies which do not employ engineers for that purpose rely upon geologists for that purpose. If you have no geologist or no petroleum engineer that results in some of the deplorable

conditions of which I spoke yesterday.

Q. What do you mean by "deplorable conditions"?

A. The Joiner well which had drilled 200 feet deeper—

Q. That is one out of 1200.

A. I can mention some others. Some have been completed in such a deplorable condition that they have drilled into one another before hitting the sand.

Q. In that field?

A. Yes, sir.

Q. Can you tell what wells they were?

A. I could not tell particular wells. I think the Magnolia was one.

Q. The Magnolia?

A. Wait a minute. Not that every well is necessarily crooked, but—

Q. Well, whose wells were crooked?

A. But the other may have been crooked.

Q. Now, which one was crooked?

A. I don't know which particular well, but, if you please, I will furnish the information.

Q. How is that?

A. I have not the information at hand, but I will furnish it to you at some time.

Q. Don't the Magnolia Petroleum Company keep geologists and experts in that field?

A. They do.

Q. No geologist can, even though he can stand there with his plumb line and tell them they are out of plumb, can put it straight.

A. Yes, sir, he can. Let me explain. The oil is down at this surface and it hits a boulder or fracture or something else and deflects. They take measurements and if it is not inclined it is vertical. They measure by acid bottles—put acid in a bottle and when the glass is inclined at that angle it is checked and the Railroad Commission comes out and says, "Plug that back and make a re-survey and see that it is straight."

Q. Now do you think it takes a Delaware Charter Corporation to drill a straight hole over there in East Texas?

A. I do not, certainly no.

Q. You said here awhile ago, you spoke about a petroleum engineer and a geologist, what is the difference?

A. There is a considerable differ-

ence. A petroleum engineer is one who specializes in production methods and the geologist is one who spends the greater portion of his time in locating oil.

Q. Can a geologist locate oil?

A. He can locate oil by drilling on structures that are indicative of producing oil.

Q. By drilling on them?

A. Yes, sir.

Q. Anybody can do that.

A. No, sir, and I think the records will show that there are five dry holes to every producing one. There are too many dry holes throughout the country, five out of every six wildcat wells that have been drilled is a dry hole.

Q. Is it not a fact that practically every geologist in the country had pronounced that East Texas territory as being dry until old man Joiner discovered that well?

A. No, sir, I do not think that is a fact. I had knowledge of production in Texas, in East Texas, at Wortham and Powell and Van for eight years before the discovery of that well.

Q. Oh, well, I'm not talking about that; that is not East Texas.

A. The Van field is pretty close to it?

Q. That is in Smith County?

A. Well, you are in the Woodbine sand.

Q. That can be found anywhere.

A. Well, there was an indication of oil there just the same.

Q. If you could tell that there was oil in Smith County and in East Texas, will you please tell us why it is that you are not richer than Rockefeller ten times over? That is all.

A. May I answer the question?

Q. Yes.

A. I do not compare in your opinion as a petroleum engineer.

Senator Purl: You spoke of invisible energy?

A. Yes, sir.

Q. Will you define that?

A. It is something you cannot see with your eye, something like electricity in a wire, that is energy but you know and I know that none has ever seen electricity.

Q. What is that invisible energy in an oil well?

A. Horsepower, nobody has ever seen a horsepower.

Q. Do you want the Railroad

Commission to regulate an invisible horsepower?

A. No, sir, I do not intend to convey that idea.

Q. What do you mean by invisible energy in an oil field as applied to a well?

A. The energy is the power of compression. Compression is not a visible substance, it is a physical state. The power contained in the gas on expanding performs work, and that work is what brings oil into the well, but it happens to be invisible to your eyes, but not invisible to our senses or measurements. That is what I spoke of a while ago when I spoke of energy that happens to be invisible, because when you take the oil and gas out of the ground you see those products but you do not see the energy.

Q. Do you think the Legislature ought to pass on that?

A. Well, you can't recover oil without that, it is a factor that contributes to physical waste, I think they certainly should.

Q. How long have you been in the oil game?

A. I have been a petroleum engineer for nine years, and also a member of the United States Bureau of Mines, which qualifies all of their engineers on the basis of production practices before they are permitted to supervise work on the public domain, that was six years ago; since then my practice has been considerably broadened.

Q. Do you subscribe to the statement which has been made by the President of one of the large oil companies to the effect that there is no place in the field of endeavor in the oil business for the small man.

A. Will you state the condition under which he made that statement, I would like to have his verbatim statement.

Q. Well, do you think that a small operator in East Texas has the same opportunity as a large operator?

A. I think under certain conditions, yes.

Q. Is there a place in the East Texas field now in your opinion for the small operator?

A. I believe there is surely. The fact that he has small holdings should not deny him the right to a portion of the field.

Q. Does he have a equal oppor-

tunity if he does not have a pipe line?

A. I think that if all of the operators would adhere to the rules and regulations of the Railroad Commission which they have laid down for them.

Q. Are you familiar with that bill which was sent down here without a caption which was written by Rhodes Baker.

A. What is that?

Q. A bill that was sent down here two days before the session of the Legislature started, a bill without a caption?

A. No, sir, I am not.

Q. Are you familiar with the Woodward Bill?

A. I never saw it until yesterday afternoon up here.

Q. Are you familiar with the Housler Bill introduced in the other session?

A. No, sir I have never seen it.

Q. What companies have you worked for prior to the time you became connected with the Central Proration Committee?

A. The Fain-McGaha Company in Wichita Falls. I was doing consulting work while I was with them.

Q. You never worked for an oil company except this one?

A. Well, the Marland Oil Company and the Mid-western Refining Company, I also spoke of that before.

Q. Did you ever work for the Continental Oil Company?

A. No, sir, not as a resident employee.

Q. You said there was billions and billions of feet of gas willfully wasted in the fields of Texas in order to get quick production, do you remember that statement?

A. I made a statement with reference to the gas produced in the Winkler field.

Q. Were you on the ground at that time?

A. Not at that particular time.

Q. Then your statement that there were billions and billions of feet of gas wasted there is hearsay?

A. No, sir, I would say that it was common knowledge.

Q. Then you say there was billions of feet of gas wasted in the Winkler field?

A. Yes, sir. I have heard the discussions at the meetings of the engineers in the Mid-Continent district, and that statement was made

and I know those statements are reasonably correct.

Q. This gas is a natural resource?

A. Yes, sir.

Q. It is essential for the wants, comfort and happiness of the people of Texas?

A. Yes, sir.

Q. Did you hear of any agitation by anybody at that time for a special session of the legislature to conserve that natural gas?

A. No, sir, all of these things are based on our past experiences. We ought to have such things as that in order to get this body to pass laws to prevent it from happening again.

Q. Did you ever hear of anything of that kind until this East Texas field came in?

A. I wish to state that some cases have been encountered years ago on the public domain under the leadership of the United States Bureau of Mines, in which they have undertaken to control those things but they have not reached to the realm of privately owned pools, and pools where the ownership is greatly divided. I said yesterday there was one pool in West Texas in which that sort of waste did not occur and both holes were discovered at practically the same time.

Q. Did you hear Governor Sterling testify here yesterday?

A. No, sir, not one word.

Q. Do you know that Governor Sterling said, and that the author of the bill said it in substance that they were not intending and did not want a bill that would define economic waste?

A. I, neither today or yesterday, have heard anybody state of economic waste.

Q. I say do you know they stated that?

A. I do not. I did not hear one word of their testimony.

Q. Have you heard the testimony of the president of the Texas Company?

A. Only a very small portion of it.

Q. Would you say that the ideas of the Texas Company are contrary to the wishes of Governor Sterling and Senator Woodward?

A. I did not hear enough of his testimony to know.

Q. Do you know that Senator

Woodward has stated that he did not want to define economic waste and that the bill does not contain such a definition?

A. I did not see it in the bill.

Q. If the bill does not contemplate a definition of economic waste will you state whether or not the measure will go as far as it should?

A. I could not understand how you can have economic waste if you do not have physical waste.

Q. If the Senate should add a clause to this bill in substance and to the effect that the railroad commission is inhibited from defining or enforcing economic waste, in your opinion would the legislature be worthwhile?

A. I don't know, I would have to think it over carefully and see.

Q. Would you advise this committee to pass a bill that did not define economical waste?

A. I don't know, I have not considered economical waste in any of my work, it has been physical waste only.

Q. Did you advise with Mr. Rhodes Baker, the chairman of the Central Proration Committee, the legal end of it, as to any thing that should be put in their bill?

A. I have never attended one single legal meeting of the committee although I am a member. I am merely a petroleum engineer and I am not dictated to by anybody. I present my opinion to anybody, majors and independents alike, I have no obligation to anybody in my work.

Q. Do you think the Legislature should have the advice, legal advice as well as technical advice?

A. I think so if it is necessary, and with reference to certain phases of the matter it might be necessary.

Q. Who do you think is the best informed man that the Senate could ask about this bill under consideration, either as an attorney, as an expert and as a ordinary laborer?

A. I think an attorney on the legal phases of the matter, on matter of waste an engineer, and on matters of administration somebody, probably some of you gentlemen here.

Q. You do not attempt to tell this committee here in anyway what sort of bill we should pass?

A. No, sir, I am not a lawyer,

engineer and legislator together, no, sir.

Q. You are not?

A. No, sir.

Q. I want to ask you this question, do you know Mr. David Donohoe?

A. Yes, sir, I do.

Q. What position does he occupy with the Central Proration Committee?

A. I think at the present time he is Chairman of the sub committee on statistics. That is a non-salaried position.

Q. How long has he been a non-salaried man?

A. Since the first of May.

Q. Of this year?

A. Yes, sir.

Q. What was his position before that?

A. Technical adviser to the Central Committee.

Q. Is that your job?

A. Yes, sir.

Q. How many technical advisers do they have?

A. Only the one as I understand.

Q. Who was that?

A. Mr. Donohoe prior to the first of May.

Q. When did they employ you?

A. About the fifteenth of June, prior to that time I had been employed on special problems from time to time but not in their regular service or employ. In other words, when an emergency case came up they asked me for assistance in those matters.

Q. Are you giving all of your time now to the Proration Committee?

A. Yes, sir.

Q. Have you other clients?

A. No, sir, not any in particular, that is no resident work.

Q. Have you advised with any of the major oil companies?

A. No, sir, I have not. I am not obligated to anybody.

Q. When did you leave the oil company in Wichita Falls?

A. I left there on May 1st.

Q. This year?

A. Yes, sir.

Q. Prior to that time you were employed by them?

A. The same McGaha Corporation, yes.

Q. Since then you have given all

of your time to the Central Committee?

A. No, I didn't give them all of my time until the 15th of June.

Q. Have you any financial interest in any of the fields in East Texas?

A. No, sir, I have not.

Senator Poage: I want to ask you one or two questions to get something clear in my mind, something I think you have already testified. I believe you stated you did not think the price of oil had anything to do with the ultimate recovery or any regulation of the ultimate recovery; is that right?

A. I would prefer to read the statement if it is available.

Q. I don't care what you said, I just want to get it clearly in my mind. I am not asking that to tangle you up. Do you or not believe that the amount of allowable production should be in anywise dependent upon the price of oil?

A. No; I don't think it should.

Q. Then you can't say, can you, that there is any physical waste simply because there is an economic waste?

A. Well, physical waste may be related to economic waste. May I explain.

Q. Yes.

A. If the ability of the pools to produce is greater than the consuming ability of the people, and these pools are produced to capacity, obviously that which does not go into consumptive channels must go into storage channels—surface storage, and no surface storage is immune from evaporation losses. Therefore, underground storage is superior to surface storage. Unnecessary surface storage is physical waste, and economic waste. To that extent the two may be related.

Q. Isn't it true that the lower price you make on any commodity, the greater consumptive power of the public. The public can actually buy more oil at ten cents than it can at one dollar, can't it?

A. Their ability is limited.

Q. But there is a spread in there, and the lower the price, the greater the consumptive power of the public?

A. That is true.

Q. As far as oil is being produced at ten cents a barrel, isn't that really an economic loss, rather

than a physical waste, to produce it at that?

A. Yes, sir.

Q. But if produced under proper conditions as to encroachment of water, and rate of withdrawal, and so forth, so that there is no rapid encroachment of water, there is no physical waste in producing if there is a market for it, even at ten cents?

A. Yes, sir. When the low price hit East Texas, I was still a member of Fain-McGaha. I was adviser in the matter of their resources and productivity of properties. They had some good properties in North Texas, and Mr. McGaha asked me what I thought about those wells, whether or not it would not be advisable to take the physical loss of abandoning the wells, rather than produce it at heavy loss. To that extent ten cent oil in East Texas directly resulted in physical waste in properties over which I had supervision; but over which the Railroad Commission has control as the conserving body in the State of Texas. I think something should be done to alleviate those conditions.

Q. Getting back to what Senator Martin had in mind a while ago, take one well—take a well in East Texas that we will assume has a market at ten cents for oil to go into consumptive channels for the benefit of the public.

A. Yes, sir.

Q. There is then no physical waste if you produce that oil, if you don't produce it under improper conditions?

A. If there was only one well in the East Texas field, you would be right. I made it specific that until a field has a few wells in it, you do not need to regard these specific things.

Q. If there are twelve hundred wells in the East Texas oil field that can sell their oil at ten cents, assuming those wells were placed under regulations, so as not to allow them to drill so deeply they would get into water, and so forth—assuming that all twelve hundred of those wells can sell their oil at ten cents, can you not still operate so that there will not be any unnecessary physical waste in that field?

A. You cannot. In the field where you have the twelve hundred wells, some sixty or seventy wells in the Joiner area are pumping,—recovering their oil; there is

no water there. I know certain of those wells that cannot be pumped at ten cents per barrel. What is going to happen to that area where they can't produce it at ten cents per barrel? They will abandon it and take the economic loss.

Q. If you had dictatorial powers over the entire field, wouldn't it be possible to produce that oil at 10 cents a barrel, as well as at \$1.00 a barrel?

A. The incentive at ten cents a barrel is to open your well as wide open as possible.

Q. If you had dictatorial powers over the entire field, couldn't you operate that field without any physical loss as well at ten cents as at a dollar a barrel,—if you utterly ignored the price?

A. You are assuming an impossible situation.

Q. Yes.

A. You are assuming the willingness of a man to spend twenty cents for oil that he can only get five cents for.

Q. Aren't some doing that now?

A. Yes, sir. Some are producing oil and not making enough to pay the cost of lifting.

Q. And in West Texas, too?

A. Yes, sir; and the State of Texas is suffering from it and will continue to suffer.

Q. You mean to say a man will not produce oil when he can't get more for it than it cost to produce it?

A. Our company has hopes that the Railroad Commission will rectify conditions. They will take their losses for a while, as long as they have hope of conditions improving, but if they lose hope they will abandon the wells, and then they are permanently lost, because flooded with water.

Q. If the operators had a reasonable hope that any commission or dictatorial body that might have control of the oil situation would work out a proper solution, whereby they might make a reasonable profit on their oil, they would go ahead and produce ten cent oil without physical waste?

A. Will you state it again, and a little slower.

Q. I want you to answer my general line of thought. I am asking you this: Isn't it true that if the operators had reason to believe that any new commission, or old commis-

sion, or any dictatorial body that might be given control of the oil industry, would ultimately work out the industry on a paying basis, they, in that event, could operate a field like the East Texas field, without physical waste, even though the oil was only bringing ten cents a barrel, and your conditions of operation would be the same as if oil was bringing a dollar a barrel?

A. I don't believe so.

Q. Why?

A. Because I don't conceive of anybody willingly and knowingly spending money for which they will receive an inadequate return—a return insufficient to even compensate expenditures. I can't conceive of that.

Q. I am asking you, if there is still hope held out to the operators that we will arrive at a stage in the oil game where they will get an adequate return on their oil?

A. The trend has all been the other way.

Q. We have been told here that if we pass a bill here, we will bolster up that mental attitude in them that oil will go up, and if we can create such an attitude, won't these fellows still pump their wells, if they believe in six months that they will get money for that oil?

A. Well, everybody is skeptical today.

Q. You are simply saying that we never could inspire that confidence?

A. Not if oil continues at ten cents a barrel.

Q. Provided there is hope on the part of oil operators that oil will go up?

A. Well, that hope is pretty threadbare at this time. Sure, we have hopes, but it has its limitations.

Q. Well, if you assume my premises?

A. If your assumption conforms to a natural state of affairs, you are right, but I don't believe it does.

Q. I am not asking you if you believe my assumption—I admit that is an assumption?

A. I admit that theoretically I could give an answer, an assumed answer, to an assumed condition.

Q. Under those assumed conditions you could produce the same amount of oil from a field over a long period of time with oil at ten cents a barrel as if the oil was bringing a dollar a barrel?

A. Sure.

Q. As a matter of actual physical production, we don't have to take into consideration the price of the oil.

A. As I understand you, you state that an operator should not be concerned at any time with the price of his product. That is a Utopian situation which I am incapable of discussing at all; I can't feature it. I would like to be able to answer it, but it is too far from the realms of actual conditions. I think that assumptions of that nature should not be considered in legislating, as the Legislature has to confront actual, practical conditions.

Q. If the Legislature is not to be concerned in the price of oil, how are we going to effect a practical conservation measure that does not take into consideration the reasonable market demand as the Woodward bill does?

A. Because, I stated that the oil is taken out of the ground in excess of the consumptive power of the public physical waste results.

Q. You admit that the consumptive powers of the public when the price is down?

A. In spite of that you stated it had its limitations.

Q. But those limitations will still keep the price of oil down?

A. They certainly have got that way so far. And that is their present trend.

Q. Now another thing I want to clear up. Senator Martin asked you assuming a field in which there was only one well, and I understood you to say that there could never be such a thing?

A. A field with one well in it? I said that when other wells are in that field that no well is isolated; you are not isolated when you have neighbors.

Q. Suppose you have a well like that at Kosse? You are familiar with that, are you not?

A. No, sir.

Q. You know where Kosse is?

A. Yes.

Q. They brought in a well there that made a great production for a while and then quit, and they drilled all around there and nobody got any oil. Would you limit the production of that well until they got other wells around it?

A. If you had positive indications

that there was no other productions around it I would not.

Q. Would you limit the production of any well until other wells are around it?

A. The minute other wells are around it it becomes, not an isolated well, but it has an obligation to a neighbor.

Q. But, assuming there are no other wells around it—as long as there are no other wells around it you would not limit this production on the theory that it was draining the other fellow's land.

A. No, sir; certainly not, because the entire reserve might be under that man's land, and might be restricted to only one location; those are odd conditions. Until a few wells are brought in it is not necessary to make stringent regulations unless the discovery well shows water, or unless it is wasting great quantities of gas. Those conditions call for immediate attention regardless of conditions, but otherwise, if it is a very efficient well, no, not until more wells have been drilled in.

Q. I want to know about some pipe line matter. I don't know whether you are familiar with pipe line matters, or not?

A. I am not. My practice is limited to the pipe line connection.

Q. You just get it out of the ground and stop?

A. Yes, sir, everything from driving the location stakes to delivering it to the pipe line connection, but beyond that I have had no experience in pipe line at all.

Senator Pollard: You are familiar with the proration and unitization of the Van Oil Field, are you not?

A. In a general way.

Q. I want to ask you this question: At the time of the discovery of oil in the Van Field, oil was selling around a dollar and a half per barrel.

A. Yes, sir.

Q. And royalty was selling and did sell in the Van Field at five thousand dollars an acre base.

A. Yes, sir.

Q. That field is known as the most perfectly unitized and prorated field in the history of the industry?

A. I think it is one of the best, yes, sir.

Q. Would you recommend that as a basis for the operation of prorated field under this Woodward bill?

A. Well, I may have some modification for that particular one.

Q. That is all I want to know about that. Now, I will ask you this—

A. (Interrupting) May I explain a little more fully on that, please?

Q. I don't want you to make a speech on every question I ask you for the reason that I want to get through and give some other member a chance. That prevents economic waste as well as actual physical waste, doesn't it?

A. Yes, sir.

Q. All right. Today royalties in the Van Field by reason of the field having been prorated for two years and royalty owners not being able to get any money for their royalties, is selling at five hundred dollars an acre base.

A. That is a fact.

Q. And oil that could have been produced and sold for a dollar and a half per barrel is now selling for thirty-one cents a barrel?

A. Exactly true.

Q. Is it an economic waste for those men interested in oil and in the owners of the royalty to have been forced to hold underground this oil that they could have sold for a dollar and a half per barrel until they can only get thirty-one cents a barrel for it?

A. Before answering that question—

Q. (Interrupting) I just ask you to answer it.

A. Please, Sir, permit me two minutes to answer the question.

Q. All right, go ahead.

A. If the other fields with the same characteristics of the Van field had been produced in the same manner as the Van Field was, the royalty would still be five thousand dollars today and the production would be a dollar and a half a barrel, sir. It is not the Van Field that is responsible for that.

Q. After you have made your speech answer my question yes or no.

A. I answered it to the best of my ability.

Q. Is it an economic waste, or not, would that condition exist?

A. It is not.

Q. Then the best thing a man can do is to prorate your field so the royalty will be reduced from five

thousand dollars an acre to five hundred dollars an acre base?

A. I did not imply that.

Q. I asked you that question and you said it was?

A. No, sir, I said if the other fields had done that. I want to make that clear so I asked not to be interrupted. The Van Field itself is not responsible for the condition under which it is suffering today.

Q. I want to ask you this, the owners of the royalty, the men who gave up their farms and moved off in order that oil wells might be placed from three hundred to five hundred feet apart, if the farmers are suffering, is that a problem of this State to consider or should we consider the proration of the State in order to carry out some theory of some petroleum engineer?

A. I am not asking that you carry out any particular theories, any particular thing. I have introduced no bill here, I saw the first one yesterday.

Q. Is it the duty of the Legislature in creating a public policy to protect the interest of the oil producing people of the State, or to consider the interests of all the people of this State?

A. I think both. Both of them are members of this State.

Q. Certainly.

A. Certainly.

Q. Then it is not fair to those who own royalty to so restrict the production of any given field that their values will depreciate 90%?

A. Please, sir, may I answer the question?

Q. All right.

A. With respect to the question which you are asking may I explain that had the Van Field opened wide open when it first came in, they would have gotten ten cents for their oil instead of a dollar and a half which they did get.

Q. Are they getting it now?

A. No, sir, through no fault of their own.

Q. Whose fault is it?

A. The fault of those who refuse to abide by the Railroad Commission's conservation rules.

Q. Who did that?

A. Too numerous to mention.

Q. Let me ask you this: Don't you know as a matter of fact that the price of oil at ten cents a bar-

rel in East Texas is a result of a conference of certain major oil companies in New York City about thirty days ago in order to punish that field and to try to force legislation through this Legislature.

A. I have no knowledge of that fact.

Q. You don't know anything about it?

A. No, sir, I know nothing of that. My work, sir—

Q. All right, I understand you. I excuse you and withdraw the question. You have said it already a hundred times. You said this morning the reason this Woodward Bill should have some penalties imposed upon violators of the orders of the Railroad Commission was the fact there were so many new oil people, inexperienced operators in East Texas, that they ought to have heavy fines imposed on them in order that they might produce as you suggested?

A. I did not present that as the sole cause, or the sole necessity.

Q. I will have the reporter to look back and read that and bring it in.

A. If you please, I wish he would.

Q. Now then, in your opinion, is overproduction the real cause of the present price of ten cent oil in East Texas?

A. I recognize the law of supply and demand as having something to do with price, of course.

Q. That being true, will you state to this committee why it is that oil in Pennsylvania is selling for a dollar and sixty cents a barrel and why the Magnolia Petroleum Company on yesterday posted the price of oil in North Texas and Oklahoma forty-two cents a barrel, and why the same company is paying for a better grade of oil in the East Texas field twenty-two cents a barrel, and the price of oil in the Van field, fifty miles away from the East Texas field, is thirty-one cents a barrel?

A. Probably all of the companies which are in the East Texas field are not in these other particular fields. I recognize different crudes as having different intrinsic values. Let me explain the nature of the Pennsylvania oil. I made a study of those production problems last summer.

Q. Where, in Pennsylvania?

A. Yes, sir.

Q. Well, go ahead.

A. That oil is known as having a very high lubrication content or a superior quality of lubricant. That factor alone permits them to get it. Moreover, they are the most careful people in the world about physical waste. They regulate their production in strict conformity with the demands for production, recognizing that any excess would be wasteful, and bring on local conditions in Pennsylvania comparable to what conditions are in East Texas at the present time. With respect to North Texas I wish to state that all of the refineries which are operating in North Texas are not operating in East Texas. Therefore, localities are different, just as wages and remuneration for services are different in different parts of the country. I am not advocating a standard fixed price in all fields of the country because intrinsic values of crude oils is not the same any more than long staple cotton and short staple cotton should be the same price.

Q. Don't you remember noticing in the newspapers about thirty days ago that the Humble Oil Company reduced their posted price from 67 cent to 37 cents per barrel in East Texas?

A. Yes, sir.

Q. On that same day or the day after, you know, Mr. Charlie Roser?

A. Yes, sir.

Q. Did you notice the statement that you issued in which—I can't give you the exact words, but I will read it to you though—

A. (Interrupting) If you can state the implications.

Q. In other words, he was popping his hands like this and saying "Goody, Goody, East Texas got what is coming to them, the Humble has cut the price of oil." Do you remember that?

A. No, sir, I do not.

Q. And about the same day that cut was made do you remember the Governor of this State in the same paper, I think the reports came out about thirty minutes apart, stated that it would be necessary to call the Legislature together because of the oil in East Texas?

A. (Interrupting) Please, sir, with respect to those questions, I was too busy on production matters purely and I did not analyze or pay

any attention to such things as that. I have heard so many allegations and counter allegations I paid little attention to them.

Q. Now, I want to ask you this, if as a matter of fact one hundred million barrels of oil, approximately, less were produced in the last twelve months than were produced in the twelve months next preceding the last twelve months, then should the price of oil go up or down?

A. It depends, sir. If the refineries have developed processes for increasing the gasoline recovery by technical processes out of the crude, probably a hundred million barrels less crude this year will more than satisfy the market which—

Q. (Interrupting) Have they done that?

A. Yes, sir, they have.

Q. How much more gasoline do the refineries get now than they did a year ago?

A. It isn't the amount.

Q. I asked you and you said if that is true, now, I am asking you again. You said that they had increased production out of a barrel of oil. Now, I ask you to state how much more gasoline you get out of a barrel of oil today than you did twelve months ago?

A. Please, let me—

Q. (Interrupting) I am asking you to answer that question. I want to know.

A. I was answering it.

Q. Just answer it. Listen, Mr. Chairman, may I please be allowed to answer the question?

The Chairman: The witness will answer the question.

Q. Answer in response to the question and not go off at a tangent.

A. When I stated they had the ability to produce more gasoline, I not only meant more in quality, but more in power as the result of increased—

Q. I asked the witness to answer in response to the question presented.

A. That is in answer.

Q. No, it is not. I want you to tell this Senate how much more gasoline per barrel is recovered out of a barrel of crude oil today than was recovered twelve months ago?

A. Please, sir, which field of crude are you speaking of? I recognize different crudes. Certain crudes have little or no gasoline,

such as the Gulf Coast. East Texas has enormous gasoline contents.

Q. As a general rule. That is the way you have been testifying for two days?

A. I have been testifying specifically.

Q. Be specific and state as to the Van field?

A. They have increased the recovery.

Q. How much?

A. I don't know the percent.

Q. What do you say?

A. I told you they increased it.

Q. You don't know how much increase in recovering gasoline per barrel of crude oil has been made in the last twelve months?

A. Not specifically, no, sir.

Q. All right. Now answer this question: Listen, and I want you to know exactly what I am talking about. According to this statement here—I believe you worked for the United States Bureau of Mines?

A. Yes, sir.

Q. Any information they give is authentic, or was when you worked for them?

A. I accept it as so.

Q. If this information is furnished me, and I say I haven't been able to obtain a copy of it, I may not, I don't know, but in the year 1930 the total crude production of the United States was eight hundred sixty nine million six hundred twenty-five thousand barrels. Now then, during that year there was eight hundred sixty-six million six hundred fifteen thousand barrels of oil run to stills, domestic, and sixty million barrels of foreign oil, twenty-three million seven hundred and six thousand barrels of crude oil exported from the United States. There was twenty-nine million seven hundred and nine thousand barrels of crude used for all other purposes making a total demand of nine hundred eighty million eight hundred sixty one thousand barrels. Deducting the total production in the United States of eight hundred ninety six million six hundred twenty five thousand barrels leaves a shortage in the United States of eighty-four million five hundred ninety six thousand barrels during the year 1930. That is true, isn't it?

A. I will accept it as such.

Q. All right. Then we drew from

storage during that year twenty-two million four hundred sixty seven thousand barrels and imported sixty-two million one hundred twenty-nine thousand barrels making a total of eighty four million five hundred ninety six thousand barrels used that way?

A. Yes, sir.

Q. Now, if it had not been for these imports of eighty-four million five hundred ninety six thousand barrels, there would have been a shortage in production over consumption in the United States of nearly a hundred million barrels?

A. How much did you say was exported from this country?

Q. Twenty three million, seven hundred and six thousand barrels. But they usually use eighty-four million, five hundred ninety six thousand barrels in the United States more than was produced in this country. Now, taking that into consideration, isn't it true the price of oil should be greater per barrel of crude in the United States this year than in 1930?

A. Not necessarily at all.

Q. Isn't it true that the United States is producing less barrels per day and per month—has been doing so for the year 1931 than was produced in the year 1930?

A. That may be true, yes, sir.

Q. Isn't it true?

A. Yes, sir.

Q. Now then, taking into consideration the fact there was a shortage over consumption in the United States last year of eighty-six million barrels, and a possible fifty million barrels for the year already in 1931, how do you as a geologist account for the fact the price of oil has dropped from a dollar and a half a barrel to ten cents a barrel?

A. I am an engineer.

Q. How do you account for that as an engineer?

A. I would call that a problem in economics and not in engineering.

Q. I will ask you if it isn't a fact there are only four purchasing companies of crude oil in the United States and they control the price?

A. I haven't studied that. That is not engineering, that is economics of some form or another.

Q. Do you know anybody that

does know about that, in the oil business?

A. No, sir, I do not. If I did, I would probably know more about it too.

Q. Now then, you made recommendations to the Central Proration Committee and they in turn made recommendations to the Railroad Commission for a proration order that was entered some two weeks ago in Texas?

A. I don't know that I recommended that, sir. I haven't even the power of recommending. I merely transmit information and facts. I haven't even the power to recommend.

Q. What facts did you transmit to the Railroad Commission in making your recommendation as to the proration orders affecting the fields in Texas, and upon what did you base your recommendations?

A. On a visit to the field, and an analysis of all the information available.

Q. Did you make that to the Railroad Commission, or to the Proration Committee?

A. To the Railroad Commission.

Q. Now then, did you recommend the allowables for each field upon the potential production of that field daily?

A. No, sir, that is an administrative matter entirely. The Committee is the people that does that. I do not recommend any particular thing.

Q. What do you do then?

A. Transmit the facts. The Commission is certainly qualified to —

Q. Since May 15th you have devoted practically all of your time to East Texas, the newly discovered oil field?

A. Considerable of the time, yes, sir.

Q. Then from your visits to East Texas you were able to make recommendations of facts or find facts as the petroleum engineer and not as a petroleum geologist—I don't want to offend either profession—to the effect that the various fields should be prorated a certain amount?

A. When you say "various fields" you mean the other fields in the State?

Q. Yes, sir.

A. I never mentioned a fact

about any other field in the State with respect to proration, allowables, or anything else.

Q. You stated this morning that you advised proration should be had with regard to the State as a whole?

A. That is my information and opinion to you gentlemen. I have not yet transmitted that opinion to the Commission.

Q. And they have already entered one order based upon your petroleum engineering reports?

A. They have heard both sides of the affair, sir.

Q. All right.

A. They did not base it on what I said because what I recommended was not carried out. In the first place, I do not recommend, so I have nothing to offer except the information.

Q. Are you familiar with—that is all, I guess I am taking too much time.

Senator DeBerry: Will you let me ask one question and then I will retire.

The Chairman: Yes, sir.

Questions by Senator DeBerry.

Q. A while ago when Senator Martin was asking you questions, you read that paragraph marked there defining waste as oil produced in excess of the market demand. I wish you would read that carefully out loud and tell me whether you think that definition of waste should go into a proper bill carrying out your suggestions or your findings?

A. It is one of the factors of waste. It does not involve all of the elements of waste. Waste has other elements than are contained in this. I do concur in it, within its limits.

Q. If you were given the power to suggest, and that is what you are doing indirectly to us, and I am glad you are doing it,—if a proper bill is written to carry out what you think should be done, that should be one of the definitions of waste, should it not?

A. Yes, sir.

Q. All right.

A. It certainly is.

Q. Now, I want to ask the stenographer to copy that. I want to be sure to get it into the record.

A. May I have the privilege of explaining why I recognize it as such?

Senator Oneal: Will you let the witness read that so all of us can get the benefit of it?

The Chairman: I was going to suggest that the witness read the definition, giving the section and the sub-section.

A. It is Section 2, Clause G. pertaining to physical waste. "Waste incident to or resulting from the production of crude petroleum oil or natural gas in excess of the reasonable market demand for such commodities for current consumption or use within or outside of the State of Texas, plus such amounts as are necessary for building up or maintaining reasonable reserves." I am sure you mean reasonable reserves above ground.

Q. That is all.

The Witness: May I state—I assume that you are speaking of physical waste." The term "physical" waste is not included in this. But am I correct?

A. Sir?

Q. I asked the question that if not a proper bill—

A. May I ask if the word "physical" is in this?

The Chairman: I would suggest that the reporter copy the section verbatim, without interlineation or the addition of any words.

A. It is one of the elements of waste.

Q. And would you recommend that such a definition or one of the definitions of "waste" in a proper bill should be in that language?

A. Yes, sir.

Senator DeBerry: All right, that's all. Now I want this to go in the record. That is the clause in the bill—what is that man's name Senator Pollard?

Senator Pollard: It is the Rhodes Baker Bill.

Senator DeBerry. That is the section or the definition of "waste" as found in the Rhodes Baker Bill.

The Witness: May I make this statement, Mr. Chairman? I said one of the elements. It is not complete.

The Chairman: That is all right. Mr. Reporter, I would like to make the statement that it is one of the elements.

The Witness: It is one of the elements.

Senator Rawlings: Mr. Chairman.

The Chairman: The Senator from Tarrant:

Questions by Senator Rawlings:

Q. Mr. Foran, you are familiar with the operations of the East Texas Field?

A. Yes, sir.

The Chairman: Senator, speak a little louder.

Q. Is there any waste being committed in the East Texas field at this time?

A. I would say that there is, yes, sir.

Q. I mean physical waste.

A. That is what I am speaking of, yes, sir. I believe so.

Q. Will you tell us in simple language, free of any technical explanations, what that waste consists of?

A. It consists of the premature intrusion of water in places where they have valuable reserves yet to be recovered which will not be recovered if the present operations are continued without some sort of regulation.

Q. Now, that is in line with the explanations you have made from charts here where the wells were allowed to flow too freely.

A. That is one.

Q. That is one waste that is being committed in East Texas?

A. Yes, sir.

Q. Are there any others?

A. Yes, sir.

Q. I don't want you to demonstrate—I want it just as simple as it can be so you will understand the import of my question. I don't care so much about the technical demonstration or explanation of the strata, etc. We are called here to deal with a practical question as legislators.

A. Uh-huh.

Q. And we want to know for the best interests of the people.

A. Yes, sir.

Q. Now I want to know in as short and simple a form as you can state into the record the different kinds of waste that are being committed in East Texas at this time. You have named one of them. Now, can you name another one?

A. Another one is the disposal problem of salt water on the west edge of the field. It is a definite relation, the exhaustion of gas energies which are producing oil at rates too rapid.

Q. Is there any other?

A. The waste of approximately four gallons of high quality, high test gasoline to every thousand feet of gas blowing into the field. There is not a gas plant in the East Texas field, although there is at this time about 150 or 160 millions feet of gas daily carrying four thousand gallons of gasoline for each million feet that is going to waste into the air. I certainly call that a waste.

Q. Now, do you know of any other forms of waste being practiced in that field?

A. The drilling of wells in certain locations too close to the water or unnecessarily close to the water level.

Q. Mr. Foran, is there any formula that we can write into a Statute that will govern the operations of oil wells in a field like this—in other words, I mean one of the elements of waste is that the well is permitted to run wide open?

A. Yes, sir.

Q. And that traps off certain deposits. Now, then, can you say that that well should be permitted to run 80 or 50 per cent or 10 per cent of its potential?

A. Yes, sir, it is a unit of the field. You know what the entire field is capable of producing without causing waste in the State of Texas, and—

Q. What I want to—if you don't get to complete this answer indicate it and I will let you answer. The question is—"Can we as Legislators write into a statute that any area or field should not be permitted to produce in excess of 10% of their potential?"

A. No, sir, because that allowable changes from time to time as the physical nature of the field changes from time to time. Therefore, the amount laid down would not be feasible.

Q. We will assume that conditions that now exist will continue for a stated period of time. Can you say as an engineer or a Legislator, that those wells in that field should run 50% of their potential—in other words, can you strike a level of percentages without doing injury to somebody?

A. Not as a legislative act, and that was the purpose of asking for public hearings prior to fixing figures. That would not be feasible.

Legislation which calls for hearings and discusses conditions under which the allowable may be changed from time to time, would seem wiser in my opinion.

Q. Is it possible, Mr. Foran, to give us any estimate or reasonably fair guess about the percentage of wastage in the East Texas field at this time? You say there is considerable wastage. Is there any way to estimate that?

A. In percentage, certain areas will lose from 10 to 30 percent of their ultimate recovery as the result of improper regulation.

Q. In other words you say the wastage now being permitted in East Texas runs from 10 to 30 percent?

A. In that district, subject to water intrusion there.

Q. Do you think a bill passed by this Legislature would curtail the different elements of wastage you have enumerated, would solve the problem in East Texas?

A. I think so; at least it would be a great stab in that direction.

Q. Is there any other field in Texas in which waste is being committed similar to that in East Texas?

A. Not that I know of—in comparable conditions.

Q. So far as you know, the only considerable waste now being committed is in East Texas?

A. To my knowledge no other field is letting that much gas go into the air without extracting that gas out of it.

Q. Well, could that wastage be prevented without doing much damage to the well?

A. Hardly so, because if plants are constructed to take that off the peak load it may drop off from the peak and it is not feasible to put in plant capacity to take care of that, because peak production is only temporary. The remedy is not to allow it to go beyond those peaks. However, a certain amount of that is necessary in every development.

Q. You either don't understand me, or I don't understand you. You outlined certain elements of waste in East Texas.

A. Yes, sir.

Q. Do you think that waste can be stopped without doing any damage to ordinary production in that field?

A. I certainly do, yes, sir.

Q. Now, then, Mr. Foran, as far

as one element of waste, I don't believe you mentioned awhile ago and that is storage—you did not mention that.

A. In storage?

Q. Yes.

A. I don't believe so.

Q. That is also another element of waste?

A. Yes, sir. I meant to state evaporation of necessary or unnecessary storage.

Q. Can you give us any idea so I may understand it—I am like Senator Martin, I am simple-minded about these things—can you give us any idea about how much wastage is taking place in East Texas as the result of storage?

A. No, sir, I could not give it to you exactly—

Q. Well, not exactly, but substantially it doesn't amount to anything.

A. I could not give any exact figures on that, but what I am stating is that production of excesses or wrongful storage results in that gravity oil from two to as high as five per cent for the first year of storage a lesser quantity. That refers to southern climates.

Q. Well, do you have any idea of how much is in storage there now?

A. It is just in tank storage on the lease. There is not so much in the field locally. Now when it leaves there I do not know whether it goes to storage or not, but if it does there will be evaporation loss.

Q. I have heard considerable discussion about waste of natural gas, and heard them say you can go through there at night and it is lighted up as bright as daytime. Do you know anything about the extent of that wastage?

A. I mentioned it at the last public hearing, that of the ninety million feet produced from three hundred thousand barrels per day, that about 40 or 45 million was burning in the place and the other being burned in boilers, and so forth.—Since the greater percentages are being wasted because there is now about four hundred thousand.

Q. Can that gas that is going to waste in the flares, can that be conserved?

A. The best method of conserving it is restraining its withdrawal from the ground, in other words, curtailing production to a point that reduces it somewhat. If it was not so

rich in gasoline, of course, it would not represent such a loss. Let me state right here that each thousand cubic feet of gas carries one gallon of gasoline, therefore that means a thousand gallons for each million feet of gas and four hundred thousand gallons for each hundred million feet, therefore, there is more than four hundred thousand gallons of gasoline daily going into the air. I think that should be curtailed.

Q. Can that be conserved without interfering with the operation of the well?

A. Yes, sir.

Q. That gas that is going up in the air, of course, that is necessary, because that brings the oil to the top?

A. Yes, sir, that is the natural function of it, it has performed a part of its service in doing that.

Q. You cannot recapture all of that gas after it has performed its service?

A. I think some of it could be returned to the sub-surface if it wasn't for the enormous split up in the ownership in the field. If it was operated as some of the fields, for instance like the Cook field in Shackelford County, and the Sugarland field in Fort Bend County. If it was operated in that manner, as a co-operative unit, yes, we could accomplish results almost impossible under the present condition. That is one of the benefits of unitization, or its equivalent. You do not always have those quantities of gas, if it is coming from the ground at pressures feasible to return it to the ground.

Q. It would not be proper in your judgment for us to write a formula by which you could conserve the oil in East Texas. That would have to be let to some board, after they had heard the facts?

A. Yes, I think in reading Senator Woodward's bill, that the principles embodied in the bill, and were well fashioned and well declared in his bill. It was very comprehensible to me after going over it, and I say that I think it offers a solution to the greater portion of the troubles there at the present time.

Q. Would you object to making a statement at this time as to what you think ought to be the allowable in East Texas on a percentage basis, — suppose a well was running ten

thousand barrels per day under the average conditions there, would you object to making a statement as to what that well ought to make on a percentage basis?

A. Well, that is a little bit difficult because it would depend on so many different conditions. The acreage surrounding that well is one factor. If you have a large number of acres undrilled around a well you are entitled to produce more than if you are restricted to a two or three acre tract, which is closely surrounded by other wells, and for that reason a well of that type might produce four to five or six hundred barrels a day, and other wells near by which would only produce three hundred barrels per day, depending upon their producing ability. To give specific figures you must consider the field as a whole.

Q. Well, treating the field as a whole or each well separately, either way you want to handle this part of it, would it be satisfactory at this time that the wells in East Texas be permitted to run seventy per cent of their potential or forty per cent or ninety per cent or ten per cent.

A. We determine what the real producing ability of those wells figures then we might be able to determine that matter.

Q. Well, you don't get the real potential, do you, you just make an estimate?

A. It is advisable in taking the potentials not to throw the wells wide open, but shut them down in order to get a uniform resistance then you can get your potentials fairly accurately.

Q. Some of those wells are pinched down now?

A. Yes, sir.

Q. Can you tell us what per cent of their potential they are running under the present state of affairs?

A. Some of them are producing five per cent, some ten some fifty, and several of them in the Joiner area are producing a hundred per cent of their potential, because they are pumper wells, all of the energy has been used up in getting the flush production, and such wells are now running wide open, however they are not large producers.

Q. Do you think small wells of a hundred barrels per days, that those wells should be prorated or

allowed to produce their full capacity?

A. It depends upon the conditions in the particular field.

Q. Do you think it would be advisable to write a statute as to the production of small wells, such as pumpers?

A. Yes, I think that should be incorporated in it, however, if the administrative function of the bill is as written that could be taken care of.

Q. You think that could be left to the commission that is vested with power to deal with it rather than the legislature?

A. Well, if you state proration, ratable production and ratable takings all the same, that is what it is for, the purpose of conserving oil in the State as a whole.

Q. If you conserve it that means keeping it in the ground?

A. No, sir, an efficient recovery of maximum reserves, and the utilization of those reserves.

Q. In other words you mean by that that the well should be so produced in an orderly manner so that they will get the maximum amount of oil out of them?

A. Yes, sir.

Q. You think in order for that to be done that it is necessary for some regulation by authority of the statute?

A. Yes, sir, I believe so.

Q. Do you think there is any substantial waste in East Texas now that you can justify this legislature in undertaking to pass a statute dealing with that subject?

A. Yes, sir, I think so.

Q. Do you think the condition in the oil field of Texas today would justify the legislature in passing a statute and making more stringent rules in order to bring about a more orderly production of oil?

A. Yes, sir, there is in East Texas today going to waste in the forms of vapors more oil than certain settled fields in the North Texas fields produce. For example here is the Central Texas field producing twenty-five or thirty thousand barrels of oil daily, and in East Texas more than ten thousand barrels of gasoline comes out of the wells in the form of vapors. When you take into consideration ten thousand barrels of gasoline, certainly it is enormously wasteful.

Q. I am looking at this from a legislative standpoint. Do you think you could swop places with me and having the technical knowledge you have now that you could set down in your own words a description of the condition that exists in the oil fields that should be corrected, and write a formula that would correct it?

A. I think so.

Q. Do you think you could indicate or define the conditions there that should be remedied?

A. Not specifically with reference to that field, I would make the provisions and the elements of those laws, and leave the administration to a duly elected or appointed commission.

Senator Oneal: I move that the committee stand at ease until four fifteen.

The Chairman: It has been moved that the committee stand adjourned—at ease until four fifteen, all in favor of that motion let it be known by saying "aye," opposed no, the "ayes" have it and the committee will stand adjourned—at ease until four fifteen.

4:15 P. M., July 23rd, 1931.

The Chairman: Gentlemen, at this time I want to suggest that in asking your questions you confine yourself to those matters that have not already been asked about before. I do not wish to curtail anybody or put anybody off but I would urge that you do not go over the same matters again.

Senator Rawlings: I just want to ask Mr. Foran to be kind enough to state in the record a simple definition of physical waste, I do not mean in legal terminology, but what you would say are the elements that constitute waste in these oil fields, so we may have that, so it may appear in the records for our information.

A. Physical waste embodies those elements which have a bearing on the ultimate economic recovery of the product within the reserve, which is the natural gas and oil. Among those elements are the inefficient utilization of the natural reservoir, energy or pressure, or disorderly withdrawal of the contents of that reservoir, which in turn results in the disorderly intrusion of water. The completion of wells in such a

manner as to not constitute a future hazard to a production of surrounding wells. The avoidable evaporation on the surface of either crude oil or gasoline, natural products. By evaporation I mean by blowing in the air, whether by vapor form or of its own liquid form, and the spacing of wells in such a manner that although it might increase the daily rate of production the ultimate—it ultimately reduces the maximum economic recovery. By economic recovery I mean a justifiable recovery.

Q. Can that always be corrected without injury to the well, or the owner of the property?

A. Yes, sir.

Senator Purl: I just want to ask one more question. I understood you to say yesterday that it took about three hundred cubic feet of gas to the barrel in East Texas?

A. That is approximately the average, fairly close to it.

Q. Did I understand you to say that you considered the Van oil field now as the most nearly properly controlled field in Texas?

A. It is one of the best.

Q. Do you agree first with these figures, they have been furnished to me, I don't know whether they are correct or not, East Texas three hundred feet of gas per barrel, Big Lake fifty thousand feet of gas to the barrel, and the Van oil field twenty thousand cubic feet of gas per barrel?

A. Those figures are the most erroneous I ever heard, they are grossly erroneous.

Q. You do not agree with them?

A. No, sir.

Q. You think Big Lake at fifty thousand feet to the barrel—

A. That is grossly erroneous, absolutely so.

Q. What would you consider a fair number of cubic feet of gas in the Big Lake field per barrel?

A. Approximately five thousand cubic feet.

Q. What would you say as to the Van oil field?

A. Four or five hundred feet to the barrel.

Q. Taking your figures, so far as the gas is concerned, East Texas is better regulated so far as gas is concerned than Vann?

A. If your figures are correct,

but might I offer my opinion on those figures.

Q. Just wait a second. I am now giving your figures. I understood you to say yesterday, and you now reiterate, three hundred feet in East Texas?

A. Yes, sir.

Q. I now understand you to say five hundred feet in Big Lake?

A. No, sir, I said five thousand would be a reasonable figure.

Q. And four hundred feet in Van?

A. Yes, sir.

Q. Those are your figures?

A. Yes, sir.

Q. Now based on your figures then East Texas, so far as gas is concerned, is wasting less gas than those other two fields?

A. No, sir, not at all, may I explain please?

Q. Yes.

A. In the first place the ratio at Van is not far from three hundred cubic feet per barrel, which was the initial ratio; that is the reason I say there is a very efficiently operated pool, they have wasted very little gas, they have pinched their pressure, which is the reason they have that pressure. I recently supervised the deepening of wells in the Big Lake pool, and I happen to know they are now producing their oil at an average of less than four thousand cubic feet per barrel, but that figure of fifty thousand feet never existed.

Q. Five thousand feet is a great deal of difference from three hundred.

A. Yes, sir, and thirty-seven hundred feet is a good deal different from seven thousand feet.

Q. There is more gas being wasted in Big Lake?

A. Yes, sir. When the gas is going out it is being wasted. Of course, you can only speak of wet gas, it carries four thousand gallons of gas-oil.

Q. I am talking about gas that the cities could use?

A. I thought you were talking about the gas produced at the well?

Q. No, I mean gas furnished in the stoves.

A. You mean gas that comes out of the wells?

Q. Yes.

A. Well, it contains four gallons of gas to the thousand feet.

Q. I mean the gas that is burned in the stoves in the city.

A. That is not the same gas that comes out of the wells. Nine thousand foot production is somewhat different from three thousand or thirty-five hundred foot production. I have worked in both pools, supervised working in the Big Lake and watched those figures.

Q. When you speak of three hundred feet in East Texas, and five thousand feet in West Texas, are you referring to the same thing?

A. No, sir.

Q. Will you reduce that down so we can get the proper analysis?

A. Yes, sir.

Q. Give me the figures in your way of reducing them?

A. If a reserve naturally contains large quantities of gas which is intermingled uniformly with the oil it is impossible to produce oil without producing gas. If that ratio is naturally high—a high ratio does not always follow, and if it is naturally low as in East Texas a low ratio is not necessarily efficient. As a measure of efficiency, I would say the pool whose ratio does not change from its early life is most efficient. The East Texas pool now has some seventy wells that are pumping, instead of flowing. I measured that ratio in a number of them and found that that ratio had risen above its original 300 feet per barrel and had gone up to 700 or 900 feet per barrel in some wells before the wells stopped flowing. That is certainly contrast with Van's 300.

#### Questions by Mr. Pollard.

Q. Do I understand from that that there is no waste in the amount of gas that is escaping, but in the ratio of lifting power, or horsepower, that is being wasted in comparison with that?

A. No; let me state, Senator, there are two functions of gas in the production of oil. The first function is to drive it through the sand before it reaches the well. That generally consumes the greater portion of the gas energy. Then the lifting process consumes the remainder of the energy. Now, when you are speaking of lifting ratios, you

are not speaking of the whole factor, but only of one.

Q. I guess I am more thick-headed than the Senator from Dallas. I can't see if you are wasting five thousand cubic feet of gas to lift a barrel, that that is not waste. Isn't that the same field as the University is having such a row about now? Have you been to that field?

A. I was out at that field.

Q. They say there is waste and want to close the wells.

A. Well, they had a public hearing—

Q. Is it necessary for you to have a public hearing to determine whether the escape of 5000 cubic feet of gas to lift one barrel of oil is waste?

A. If you are talking among experienced oil men, no; if not, yes.

Q. Can use ever be made of that 5000 cubic feet of gas from that well?

A. They are processing that for the gasoline content in it. The East Texas people are not; they are burning everything.

Q. It costs how much to make a gallon of gasoline from one of those casinghead plants?

A. Sir?

Q. What does it cost to make a gallon of gasoline out of that gas?

A. It would depend upon the size of the plant, gathering systems, and so forth; it would take me hours to explain. If you have the time I will explain.

Q. Give me a general idea of the approximate cost of reduction of gasoline from gas in a casinghead plant in the East Texas field?

A. There is no plant in the East Texas field.

Q. Suppose there was one of the general, ordinary casinghead plants there; what would it cost a gallon?

A. You had better ask a casinghead plant man.

Q. Then, you don't know whether it is cheaper to let the gas escape, or to manufacture gasoline from it?

A. Yes.

Q. Then, if you do know, why don't you tell me?

A. I don't know exactly.

Q. Well, you don't know at all—you said I would have to get a casinghead plant man?

A. Yes; if you want specific information.

Q. Well, give me the approxi-

mate cost per gallon, taking into consideration 1200 wells over 120,000 acres of land, tell me what it would cost per gallon, to collect that gasoline—to establish casinghead plant over that field, and recover the gasoline?

A. It would take some time to figure that. All casinghead plants must enter on their books the depreciation of their plant.

Q. Mr. Foran, can't you ever give us a general idea and a direct answer to a question?

A. That enters into the cost, and I want to explain why it could be done over there. May I explain it?

Q. I will be glad for you to do it.

A. You have to know what your depreciation is; that is a figure of the cost.

Q. What would that be?

A. One minute, please.

Q. All right.

A. In the Joiner area, if a plant were put in there for the wells flowing in their early life, and you put in a gathering plant, you would have to put them in on the basis on which those wells were flowing at that time to handle it. What would you do if ninety days later seventy of those wells flopped and you did not get the gas? Then you would have a high cost. On the other hand, you might have a longer life if the field were conducted in a more orderly manner. When you ask for an exact cost figure, without regard to those considerations, an answer is not possible.

Q. All right, if an answer is not possible, how can you tell this Senate there is waste in permitting the escape of oil—I mean of gas, in lifting a barrel of oil, when you don't know what it would cost to recover four gallons of gasoline from a thousand cubic feet?

A. Everybody knows that there are thousands of plants recovering four gallons of gasoline from a thousand cubic feet of gas.

Q. But that is where wells are close together. You have one well to every 100 acres in the East Texas field?

A. No, sir; they have not.

Q. How many wells have you in the East Texas area—1200?

A. 1200.

Q. How many acres?

A. 120,000. They are not draining that much.

Q. Don't you have an average of one well to every 100 acres in that field?

A. Not for the purposes of gathering gas.

Q. No; not for the purpose of your answer. You admit you don't know what it will cost, and in order to determine whether there is waste or not, a schoolboy would know that you must determine the cost of gasoline.

Senator Woodward: I think the Chair ought to intercede; this is not an argument between the Senator and the witness.

Senator Pollard: Senator, will you tell me as a lawyer and a man experienced in business, that before there is waste in the production of four gallons of gasoline from 1000 cubic feet of gas, that you must first determine whether it is more economical to let the gasoline escape or produce it?

Senator Woodward: I am not the witness.

Senator Pollard: Well, you are taking the witness's part, and if you are speaking for him, you should answer my question.

Senator Woodward: I was raising a question as to the manner of questioning the witness.

Senator Pollard: Senator, I would like for you to ask the question, because you are an experienced lawyer.

Senator Woodward: I don't care to indulge in these sidebar remarks, and carry on an argument between himself and the witness, and tell the witness a schoolboy ought to know certain things; that is not the proper way to conduct a hearing.

The Chairman: The Chair suggested yesterday that we did not want any argument between the witness and the one doing the questioning. I think the Senators themselves being twenty-six years old, and capable of sitting in the Senate, ought to know without being reprimanded, ought to know when they are indulging in a debate with the witness. The Chair would prefer and must insist that the question be put to the witness in an orderly manner without a debate or argument.

Senator Pollard: All right, Mr. Chairman.

Q. You say you don't know the cost of a gallon of gasoline produced

in East Texas from gas that is escaping in lifting the oil?

A. Not the exact cost. I can give you an estimate of the cost.

Q. All right; give it.

A. About one cent a gallon.

Q. That is a question I asked you a good while ago, isn't it.

A. But that is not over every foot of gas in the field. That is the reason I asked to explain about certain sections in the field. You are asking questions about certain things that no man could give an answer to, unless you qualified your questions.

Q. Now, can you produce that gasoline cheaper in a refining plant?

A. You can't produce casinghead gasoline at all in a refining plant.

Q. You know what I am talking about. Can you produce gasoline from a refining plant cheaper than you can from a casinghead plant?

A. East Texas crude, I don't know; I am not a refining man.

Q. You could testify as to casinghead gasoline; certainly you could go a step farther?

A. When I said a cent a gallon cost, I wish to state that is the cost if you take the gas under pressure and pass it through an absorption plant, and not through a pressure plant. You see there are so many ways casinghead gas is produced. Your question is very vague, and if you are not familiar with the circumstances, of course, I am not either, and could not answer.

Q. Mr. Foran, taking into consideration the cost of reducing the casinghead gasoline to gasoline ready for consumption, would it be cheaper to produce gasoline from refined oil in East Texas than it would be to produce it from casinghead gas?

A. Under the present low prices of crude, it would be.

Q. Then it would be an economic waste to recover casinghead gasoline in East Texas?

A. Not to preserve it in the ground.

Q. I see.

A. That is what I am speaking of. If you can use it, I see no justification for putting it in the air, when you can keep it in the ground.

Q. Well, isn't it a fact that the gas in the Big Lake area is more saturated with gasoline content than in the East Texas area?

A. No, sir; it is 6/10 of one gallon, the East Texas gas is approxi-

mately seven times as rich. I know because I took the samples myself.

Q. I believe a few minutes ago we were discussing this fact, that the consumption of crude oil in the United States today is 100,000 barrels more than the production; isn't that true?

A. Yes, sir.

Q. If that is true, why is it since June 20th to July 4th this year that the price of gasoline—wholesale gasoline—dropped like it did?

A. The price of wholesale gasoline has nothing to do with petroleum engineering. I would prefer for somebody better informed to answer the question.

Q. Well, would you, in arriving at a market demand as regulating the production, take into consideration the consumption of crude oil, or the consumption of gasoline, and other by-products of crude oil?

A. Yes, sir.

Q. Which one would you consider?

A. I don't know; different crudes are different.

Q. You don't understand me. In arriving at the curtailment of production, to meet market demand, under your theory, would you take into consideration the consumption of crude oil or the consumption of gasoline and other products of crude oil?

A. You would take both into consideration, sir.

Q. All right; then you would take into consideration the importation of gasoline and crude oil from Russia and Venezuela manufactured and delivered into the United States, and also the importation of crude oil from those countries?

A. No, sir; their production does not come from American territory and I can't see where it has a bearing on subsurface waste in Texas.

Q. I am talking about your theory of controlling production to meet market demand. Where there are 36,000,000 barrels of crude oil imported into the United States, don't you take into consideration also the importations of gasoline and refined products?

A. As I stated I am a production engineer, and not informed on the refining or the marketing economics at all.

Questions by Senator Woodward.

Q. Mr. Foran, first, I want to ask

you if I understood you to say a while ago, that it requires in the Van Field approximately 300 cubic feet of gas to lift a barrel of oil?

A. Yes sir.

Q. Whereas in the Big Lake field it requires approximately 5000?

A. I believe that is the figure. I know the average figure of the Big Lake Oil Company is about 3200 feet.

Q. In reference to waste, you do not regard as waste that additional amount that it takes in the Big Lake field over and above what it takes in the East Texas or Van field?

A. No, sir.

Q. Now, explain why it is not waste to use five thousand feet there, and 300 feet over here?

A. All right; I have examined cores from wells drilled in the Big Lake field, and cores from wells in the East Texas field to get an index to the resistance offered by the sand or lime to the flow of the oil. It stands to reason that to force any liquids or fluids through a bed of clay or fine, porous material, calls for more energy than to push that same fluid through gravel which is loose or open.

Q. Go ahead.

A. Now, in comparison, the sands of the East Texas field are to the tight dolomites of the Big Lake big pay as fine cement sand is to a loose gravel.

Q. In other words, waste is that which is when produced without beneficial use?

A. Exactly.

Q. It is not determined by whether it takes 300 pounds in one area and 5,000 in another?

A. Exactly.

Q. If put to beneficial use it is not waste?

A. No, sir.

Q. Now, Mr. Foran, I want you to get back to Senator DeBerry's question of yesterday, wherein he asked you to read Section 15 of the bill now before the committee, and which I will read to you now: "The fact that any party owning or operating any property producing crude petroleum oil or natural gas is not operating such property so as to produce waste prohibited by this act, if such property alone was considered, shall not justify such party in violating any rule, regulation, order or judgment regulating or affecting not

only such property, but all other property." Will you give the committee your interpretation of that section, and what might be included in that, making some illustration, if you have one in mind?

A. That clause in my opinion presumes the possibility of a well being produced without physical waste with regard to that well in isolation. But while such a thing can happen, and it can be produced itself, within its own limits, without physical waste occurring within those limits, physical waste might occur as the result of those local operations in some other neighboring area; therefore, if you treat it in the pool as a whole, while it may not of itself show physical waste, it is being produced in such a manner that physical waste is a resultant from an external point of that well.

Q. Would you say this is a typical illustration: A well might be producing 2500 barrels of oil, with no evidence of physical waste—in other words, a perfect well; but by producing that amount of oil it brings in salt water into an adjoining well—

A. Yes, sir.

Q. In that instance that well itself—

A. Exactly.

Q. —was not producing—bringing about physical waste, but its operation was producing physical waste in adjoining wells?

A. Yes, sir, and we will say furthermore it has the lowest gas-oil ratio, therefore, indicating remarkable efficiency, but at the same time it is taking remarkably large amounts of fluid out of the sand. Taking large amounts of fluid out of the sand brings in large amounts of water, and bringing in large amounts of water may do damage externally to the lease from which the large quantity of fluid was being taken. That is the manner, in spite of the low ratio and no apparent waste, considerable damage may be done. Furthermore, with respect to the magnitude of waste occurring on the surface as compared with the waste occurring underground, the underground waste is several times more than the surface waste.

Q. Now, Mr. Foran, if you can, I would be glad for you to state in more or less general terms, and without any extended explanation, unless someone calls for it, the effect of salt

water, and its relationship to waste; just give a general summing up.

A. A rapid intrusion of salt water calls for a rapid extraction of that salt water, or lifting to the surface by mechanical means, natural flowing, or otherwise, but on its arriving at the surface some disposition must be made of it. The disposition is naturally looked for locally; but in order to take large quantities of salt water locally, our agricultural lands can only assimilate very small quantities or limited quantities, or fresh water rivers can only assimilate limited quantities. If produced in excess of those quantities it naturally results in certain damage to lands, and if produced in excess of reasonable quantities, the cost becomes unreasonable, and wells are prematurely abandoned, as a result of that, although there is still oil that might be recoverable if that salt water were not accompanying it in such an amount. Therefore, the amount of salt water accompanying the amount of oil in any one well is a factor in determining whether all that oil will be produced out of that well or not. Therefore, the salt water disposition in East Texas will have a bearing on the time in which otherwise profitable wells will have to be abandoned.

Q. Now, one more question and that it all. In respect to the amount or quantity of gas energy in the Van field and in the Big Lake field, which is the greatest?

A. The amount of energy in the Big Lake field is, I would say, twenty or thirty or forty times more than in the Van field. The greater amount of energy being available allows a greater amount to be used with the same efficiency.

Q. And without producing waste?

A. Yes, sir.

Q. Mr. Chairman, I believe that is all the questions that I desire to ask the witness.

Senator Small: I would like to ask one question.

Questions by Senator Small.

Q. Assuming that the oil gas ratio is what it should be, don't you consider it waste to blow that gas that is necessary to raise the oil in the air? Don't you think that would constitute waste?

A. Unless it is necessary to determine the nature of a new pool

which is not comparable to other pools, yes, I do, with that exception.

Q. Don't you believe that the proper conservation of our natural resources will demand that we conserve the necessary gas that comes out in the orderly production of an oil well? That is the same question I asked you before.

A. Well, Senator, if eighty per cent of the energy—I mean, if all the energy is required to move that oil, if there is a necessity for the oil, I think you are justified in disposing of the gas into the air if its energy has been properly used.

Q. You know as a matter of fact, do you not, that a great number of these gasoline plants have been extracting the gasoline from the gas and competing with this cheap oil in East Texas, and still operating apparently at a profit?

A. Will you state the question again?

Q. Don't you know as a matter of fact that a number of them, a number of these gasoline plants that have been extracting gasoline from this by-product, the gas, have been going ahead and competing in the gasoline market with this cheap oil that we have in East Texas?

A. Yes, sir, they have.

Q. A large number of those plants in West Texas are still operating?

A. Yes, sir.

Q. Operating at a profit, regardless of the fact that East Texas is producing ten and fifteen cent oil?

A. If they happen to have a local market for that gasoline, yes, sir, they do, but as a straight gasoline producer they might not. They might be operating at a loss at the present time.

Q. Regardless of the cheap price of East Texas oil they are going ahead with their operations?

A. Yes, sir.

Q. And the gathering process in East Texas would not be more complex than would be found in certain Panhandle areas that are at this time conserving that gas?

A. Exactly. If the field was properly regulated it would enable the operator to profitably extract the gasoline and blend it with the refinery product. It is the excess of crude then that displaces this gasoline. If properly controlled there would be no such thing as an excess

of casinghead gasoline in the State of Texas and no reason for not treating it.

Q. From an operating standpoint, is there anything particularly difficult about gathering that gas?

A. Not if the field is properly regulated.

Q. If the wells are sufficiently close together, you could get a group of wells that would maintain an ordinary plant?

A. Yes, sir, both in the Kilgore area and the Joiner area and certain sections of the North, yes, sir.

Q. That gas is being blown into the air with no effort to conserve the gasoline content, or to conserve the fuel element that is in that gas?

A. Yes, sir. Some of it is, and some of it is being burned for fuel in the boilers, but being burned without being processed for gasoline first.

Q. That that is being burned, they are losing the gasoline content?

A. Yes, sir.

Q. But doesn't add to the heat qualities?

A. No, sir.

Questions by Senator Pollard.

Q. Isn't it true that you stated yesterday that the gas pressure in the East Texas field is not as great as that in other fields?

A. No, sir, I stated that the gas pressure in the East Texas field was from a maximum of eight hundred pounds in the pumping well area—I mean a minimum of eight hundred pounds, to a maximum of fifteen hundred and fifty pounds in the West Joiner area.

Q. What is the pressure in the Van field?

A. The casinghead pressure is about eleven hundred and twenty pounds, the actual bottom hole pressure about eleven hundred and ninety pounds or twelve hundred pounds.

Q. The Van field is under the unit plan of control?

A. Yes, sir.

Q. Owned entirely by the major oil producing companies?

A. I think there are some small individual operators, but they are outside what is known as the unitized area.

Q. I think there are only one, two or three.

A. That may be.

Q. I know that field pretty well.

A. I will accept your opinion on that.

Q. How many casinghead gasoline plants have they in the Van area?

A. I don't know.

Q. They don't have any.

A. I don't know; probably not.

Q. I don't know of any. Well, is there waste there by reason of not having any?

A. No, sir.

Q. Why is there waste in the East Texas field and not in the Van fields?

A. Because the East Texas field is producing more than is necessary.

Q. All right. They are not producing as much gas as in the Van field.

A. But the East Texas field has a spacing of three hundred feet. Van isn't subject to that evil.

Q. There are more wells per square acre in the Van field, producing today, than there is in the East Texas area, as compared to production, the number of acres that will produce in each field.

A. But in the Van field the gas oil ratio has remained constant. As long as it does that is the best indicator there is no waste, because with the increasing distance from which the gas has to be drawn in blowing into the well, in spite of that ever increasing distance, still the same amount of gas does the work. That is due to the choking of the wells and the manner in which the field is regulated. That is why seventy wells in the Joiner area have stopped flowing.

Q. What is the gasoline content of the gas in the Van area?

A. I imagine very close to the content in the other pool.

Q. What is the waste in the East Texas field where it takes three hundred cubic feet to lift a barrel of oil, when there is no waste in the Van field where it takes four hundred and fifty cubic feet with the same content of gasoline?

A. If the Van field was producing anything like the hundred and forty million feet of gas daily that the East Texas field is, I would agree with you.

Q. How many barrels of pro-

duction do you have in the Van field today?

A. Approximately forty-three thousand.

Q. How many in the East Texas field?

A. About four hundred thousand.

Q. Three times four hundred thousand is a hundred and twenty million?

A. Yes, sir.

Q. And forty—

A. (Interrupting)—times three hundred is twelve million.

Q. Now, wait a minute, you are wrong. Multiply that out.

A. It is twelve million nine hundred thousand, to be exact.

Q. Then you have a production of one-thirteenth as much in the Van area as you have in the East Texas area, and you are producing—

A. (Interrupting)—one-tenth as much gas.

Q. No.

A. Twelve million is one-tenth of a hundred and twenty million.

Q. Then your ratio of gas is one to thirteen—I mean oil, and your ratio of gas is one to ten. You are producing more gas and it is escaping,—why isn't that waste?

A. You are producing more gas where?

Q. In the Van field.

A. Your ratio there is the same as in East Texas.

Q. You testified in answer to Senator Purl that it was four hundred and fifty—

A. (Interrupting) I said •I would recognize four hundred and fifty feet as a reasonable figure. They are much below that due to their efficiency.

Q. You know that?

A. Yes, sir.

Q. When did you examine that field?

A. I have personally looked over the records of the Pure Oil Company, the people operating that field. They are operating for a number of other companies. I got that figure from their petroleum engineer, their chief engineer.

Senator DeBerry: I would like to ask him two or three more questions.

Questions by Senator DeBerry.

Q. When you were testifying a while ago with respect to a firm you worked for in West Texas, that they

had to abandon some wells out there because they couldn't sell oil at as much as it cost to produce it. Did you testify to that?

A. No, sir. I testified that they discussed the matter whether it would be better to abandon some of those wells or to wait for a price which would enable them to produce the oil, and the whole question was how long would the present chaotic conditions exist. If they would be rectified in a hurry we would preserve the wells, and if not we would abandon them and take the loss.

Q. At the time that occurred what was crude oil selling for in East Texas?

A. Anywhere from twenty to I guess thirty-five cents.

Q. If that price had been maintained and not gone any lower in the East Texas field, how long could your people out there stay in existence?

A. They couldn't have stayed in existence under those conditions. When the price of oil in North Texas came down to fifty-one cents a barrel the matter came up immediately, because the lifting costs were higher than that figure.

Q. In other words, East Texas oil will have to get back to fifty cents per barrel before they can economically produce oil there on those holdings; is that right?

A. Something like that; around there, yes, sir.

Q. I understood you to testify that if oil was produced in such quantities in East Texas so that wells of that nature had to be closed down, that would be a physical waste?

A. Yes, sir, I would call it that, if those wells had to be closed down as a result of no regulations in neighboring pools, certainly it has its effect. I consider it in the State of Texas a conservation problem.

Q. These rules and regulations will have to get oil up to where it will sell above fifty cents before your people can operate at a profit, or even at a cost of production?

A. No, sir, it would have to be fifty cents in that locality, but not East Texas. Oil there this morning is forty cents a barrel, and only half that in East Texas. The East Texas price does not have to rise to fifty cents; if it did that would become very profitable property. I did not

imply that East Texas oil had to be fifty cents. This very lease I am speaking of is drawing forty cents.

Q. It is worth more than East Texas oil?

A. Yes, sir.

Q. Why?

A. By virtue of its demand.

Q. Is it better oil?

A. No, sir, but more in demand there locally.

Q. Local conditions make it worth more?

A. Yes, sir, purely a local condition.

Q. If these conditions continue to exist in East Texas those wells will have to be abandoned?

A. They will, yes, sir.

Q. How much—you say oil will have to go back to fifty or fifty-five cents, somewhere along there?

A. In that locality; not necessarily in East Texas.

Q. In that locality?

A. Yes, sir.

Q. In other words, general oil conditions will have to get to where it will sell in that locality for that price?

A. Yes, sir.

Q. If general conditions have to get so that that oil there will have to bring sixty-eight cents per barrel, and East Texas is to blame for it not being sixty-eight cents, would East Texas then be wasting oil?

A. I don't know.

Q. You said it would be waste when it was below fifty cents, if they created the condition that makes your people sell below fifty cents, you said it was a physical waste?

A. It does result in that.

Q. If it takes sixty-eight cents for them to get by, and East Texas—on account of something happening in East Texas—is responsible for oil not going up to sixty-eight cents, will East Texas be wasting oil?

A. It would be responsible in a measure for the waste of oil, yes, sir.

Q. I asked will it be wasting oil?

A. In that light, yes, sir, it would be waste.

Q. All right. If conditions get so out there in those holdings that they can't get that oil out of there—that they have got to get eighty-two cents in that local territory before they can operate economically or make

a profit, then if East Texas is to blame for holding oil down so they can't get eighty-two cents, is East Texas still wasting oil?

A. No, sir, eighty-two cents is a reasonable price for the oil regardless of what East Texas does.

Q. Alright, I just wanted to see where that dead line was. I didn't know how deep I was going to have to dig. We got to eighty-two cents before we stopped.

A. I didn't say that necessarily. Local conditions up there have something to do with it also.

Q. Well, isn't it a fact that this Board—when you create this Board, if you say it is a physical waste now when East Texas is causing it to sell below fifty cents, and then I asked you about sixty, and when I got to eighty you said you didn't think East Texas could be blamed for it because that would be a fair price regardless of all things. Isn't it evident then that this Board that has to prorate East Texas to save physical waste in West Texas, wouldn't they have to arrive at that figure whether it be fifty-three, sixty-eight or eighty-one cents?

A. That is an administrative problem for them.

Q. That is going to cause an argument, will it not, sooner or later, because everybody knows the whole ruckus is about the price. Now, I want to ask one more question and I will release the witness. Do you think that to carry out your ideas of conservation, that it can be accomplished by a bill that does not define as physical waste oil produced in excess of a fair market demand.

A. I stated that very clearly, that oil produced in excess of the market demand results in unnecessary storage, and therefore physical waste. That is in the record.

Q. And you say that a bill that does not carry that will not accomplish the purpose for which you have been employed to try to help get the oil industry out of.

A. That is one of the measures. That is not the only one.

Q. I understand, but to make a complete bill, or to accomplish what you seek to accomplish you think and you say that a bill will have to have as one of its definitions of waste that it is waste to produce oil in excess of the market demand?

A. Unnecessary storage is waste in my opinion.

Q. That is an entirely different proposition?

A. I think it is exactly the same.

Q. I don't see where storage comes into it. You could produce too much without having extra storage?

A. If you produce more than is consumed, where does it go? If it isn't consumed, where does it go?

Q. I will answer that by asking you a question, is there an excess in storage in East Texas?

A. No, but there is in other places that is available for the market.

Q. Where?

A. California has an excess. The eastern seaboard has an excess.

Q. In storage?

A. One of your men just told me an enormous excess in crude is from foreign countries. Certainly there is an excess.

Q. Is there any more oil in storage today than there was twelve months ago?

A. I don't know.

Q. Is there any more oil in storage today than there was eighteen months ago?

A. I don't know.

Q. Why do you say there is an excess in storage?

A. I didn't say there was an excess in storage all over.

Q. Didn't you say there was an excess in storage now?

A. I said there is a lot of oil in storage.

Q. Didn't you say there is an excess in storage now causing a depressing effect on the market?

A. I haven't discussed that at all.

Q. All right, that lets you out on storage.

A. I said if there was excess storage, it is waste.

(At this point, on motion duly made and seconded, the committee recessed until Friday morning, to convene immediately upon adjournment of the Senate.)

#### EIGHTH DAY.

Senate Chamber,  
Austin, Texas,  
July 24, 1931.

The Senate met at 9 o'clock a. m., pursuant to adjournment, and was